THE SPHINX HYPOTHESIS

Mehit: The Full Eye of Horus

Zep Tepi Series — Supplementary Hypothesis to Shemsu Hor (Paper III)
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Abstract

'Discours à prononcer par Mehyt qui réside à Behedet…' — Words to be spoken by Mehyt who resides at Behedet.— Hymn to the barque of Mehyt, Temple of Edfu, under Ptolemy IV Philopator (Cauville 1982, p. 106)

The Great Sphinx of Giza bears no builder's inscription and, until recently, no known Egyptian name. This paper proposes a Predynastic origin and identifies Mehit—a reclining lioness attested at Hierakonpolis and Thinis, linked to Eye-of-Ra mythology and Early Dynastic seal-impressions—as the best-supported candidate for the Sphinx's original name.

The conventional attribution to Khafre rests on circumstantial evidence, as Selim Hassan, who excavated the enclosure, acknowledged. The Sphinx Temple was abandoned before completion, and no Sphinx priesthood appears in any Old Kingdom tomb at Giza (Junker 1929–1955; Reisner 1942) — the plateau's only monument without a documented Old Kingdom cult. Mehit's cult centres were Thinis, Sebennytos and Hierakonpolis, not Giza. Smith (1963) published Wepemnefret's slab stela, whose titulary names Mehit; Der Manuelian (2003) reads the title as 'heka-priest of Mehyt'.

The framework places the Sphinx within the 3800–3100 BCE Shemsu Hor horizon documented in the Zep Tepi Series (Papers I–III, Levy 2026). That range is a corridor integration sequence, not a construction estimate, resolving into three phases: arrival in Upper Egypt from c. 3800 BCE; northward spread reaching Giza by c. 3500; and demographic majority in Lower Egypt c. 3300–3100. Carving is assigned to the second phase, c. 3400–3300 BCE, when settlement on the Giza floodplain is documented and stone-working technique had developed over some four centuries in Egypt; the monument then stands exposed and unmaintained through the third. Seven predictions derived from this framework are tested against the monument across Egyptology, geology, archaeology, palaeoclimatology and archaeoastronomy.

Evidence includes a candidate population with documented Giza-corridor presence; non-uniform erosion on the western enclosure wall, requiring a directional mechanism and thus a pre-Khufu catchment; palaeoclimate proxies for the transitional period, alongside documented flash flooding from short, intense rainfall on the plateau before pyramid construction; and a burial history consistent with a monument whose custodians left no institutional successors. The earliest attested royal headcloth, on the Den label dated to c. 2985 BCE, sets a terminus post quem for the face, yielding a two-event model: Predynastic body, dynastic face, some three to four centuries apart. Falsification conditions are stated explicitly, and physical tests are proposed that would discriminate between this account and the conventional attribution.

Keywords: Great Sphinx of Giza, Mehit, Shemsu Hor, Followers of Horus, Horus of Buto, Predynastic Egypt, Maadi culture, African Humid Period, haloclasty, recarved head, yardang, Herodotus, Pliny, Zep Tepi Series

Author's Note

This paper is a Supplementary Hypothesis to the Zep Tepi Series. Three prior papers and a bridging paper establish the framework; they are summarised here for readers encountering this paper first.

It is not a Corridor paper — those trace the migration route from the Richat Structure to Hierakonpolis. It sits alongside Phase Zero as a companion addressing the same transitional period: where Phase Zero asks what knowledge the Shemsu Hor transmitted into the pyramid tradition, this paper asks what they may have built when they passed through Giza. Together they propose an account of the full legacy the Shemsu Hor left at the Giza plateau.

This paper assumes the evidence established in Papers I–III and does not re-argue those cases. Its specific contribution is a positive cultural attribution for a monument whose anomalies have been documented but not explained within any coherent cultural framework. Colin Reader's geological work (2001, 2026) established that the Sphinx is probably not Fourth Dynasty; this paper proposes who built it and when. Reviewers assessing whether the Shemsu Hor constitute an archaeologically grounded population — rather than a textual tradition — should consult Paper III (Levy 2026, DOI: 10.5281/zenodo.21381860); the population evidence is that paper's domain, not this supplementary's.

Main Series Papers: Paper I — The Eye of the Sahara Hypothesis. Paper II — Zep Tepi: People of the First Time. Paper III — The Shemsu Hor Hypothesis (Zenodo DOI: 10.5281/zenodo.21381860). Phase Zero — The Bull in the Sky, Bridging the Gap (Zenodo DOI: 10.5281/zenodo.20150430).

Paper III established that a Saharan pastoral population integrated at Hierakonpolis around 3800 BCE and spread northward through the Nile Valley over the following six centuries, reaching the western Delta by approximately 3200 BCE. Their northward trajectory passed directly through the Giza corridor — the geographic midpoint between their Upper Egyptian integration site (Hierakonpolis, HK6) and their documented Lower Egyptian capital (Buto, Per-Uatchet).

This paper asks a different question than Phase Zero. Phase Zero asked what knowledge the Shemsu Hor transmitted — and traced it forward into the pyramid tradition. This paper asks what the Shemsu Hor may have built when they passed through Giza. The candidate answer is the monument with no recorded builder, no founding inscription, and no Old Kingdom priesthood — facing the equinoctial sunrise, eroding faster than any monument built 500 years later in the same rock, its face recarved long after its body was completed.

Giza sits at the geographic midpoint of the documented Shemsu Hor expansion corridor. The population passed through this location during the terminal African Humid Period, when the plateau received episodic rainfall confirmed by near-Giza paleoclimate proxies. The monument faces due east — the equinoctial sunrise, the Wedjat 1/4 orientation documented in Paper II. The anomalies accumulate: no inscription, no priesthood, an abandoned temple, a recarved head, a burial cycle no one maintained. A monument with no recorded builder, positioned exactly where the Shemsu Hor passed through, during the climate window that could have produced the observed erosion.

I did not set out to write a Sphinx paper. I set out to trace the logical extension of the framework established in Papers I–III. The Sphinx is where that extension appears to lead. Paper III ended with the corridor population integrated at Hierakonpolis and the northward spread underway.

This paper asks what that population built at the geographic midpoint between their two documented capitals — the Giza plateau — as they passed through.

Introduction

Paper III ended at Hierakonpolis. The Shemsu Hor — the Saharan pastoral population documented integrating at HK6 from approximately 3800 BCE — had established the earliest and most elaborate elite centre in Predynastic Upper Egypt. The northward expansion was underway. This Introduction traces what the archaeological and ceramic record documents for the corridor between Hierakonpolis and the Delta, extending the series timeline into Lower Egypt before the Giza plateau and its monument are introduced.

The population, the corridor geography and the chronology on which that arrival rests are documented in Sections 2 to 4; what follows here is the monument that stands at the corridor's midpoint.

The Great Sphinx of Giza is the oldest and most recognisable monumental sculpture in the world and, in one specific sense, a complete archaeological mystery: no ancient text, no inscription on its body, and no contemporary administrative record identifies who carved it, when, or why. The conventional attribution to Khafre rests on spatial proximity to his pyramid complex, the architectural similarity between the Sphinx Temple and Khafre's Valley Temple, and an ambiguous reference in Thutmose IV's Dream Stele — a text that some scholars read as recording a prior king's restoration work, not original construction. Selim Hassan, who excavated the enclosure himself, acknowledged that there is not a single contemporary inscription that connects the Sphinx with Khafre beyond inference.

Against this circumstantial case stands an accumulation of physical and documentary anomalies that mainstream Egyptology acknowledges but has not integrated into a coherent explanation. The Sphinx's body is more eroded than its head, despite the head being continuously exposed and the body periodically buried — the reverse of what compound weathering predicts. Colin Reader's geological analysis (Archaeometry, 2001; Archaeopress, 2026) concludes from the spatial distribution of runoff erosion that the Sphinx predates Khufu, not merely Khafre, with the western wall erosion pattern reflecting rainfall catchment from the west that was intercepted by Khufu's quarrying operations. AERA's own documentation acknowledges the Sphinx Temple was never completed and that it is doubtful whether a Sphinx cult was ever organised in the Old Kingdom. The human face bears a nemes headdress, a post-unification symbol whose earliest attestation is the Den label of c. 2985 BCE, establishing a terminus post quem of approximately 2985 BCE for the face carving and implying that whatever form preceded it is older.

Previous alternative chronologies have identified and documented these anomalies without providing a culturally grounded explanation. Robert Schoch's geological work (1992) proposed a substantially earlier date based on deep weathering profiles but without a candidate archaeological population. Reader's conservative interpretation argues for a pre-Fourth Dynasty origin on purely geological grounds, also without a cultural attribution; he extends the argument from the Sphinx to the wider necropolis in Reader 2002 (Journal of the Ancient Chronology Forum 9: 5–21). West and others raised the anomalies without a coherent demographic framework. The result has been a debate stalled at geological interpretation, with no agreed candidate for who built the monument or when.

This paper takes the next step. Rather than arguing only that the conventional attribution is weak — which Reader (2026) has argued on geological grounds, proposing an early to mid

Second Dynasty date rather than this paper's construction estimate of c. 3400–3300 BCE. On the construction estimate advanced here the two positions are separated by roughly five to six centuries, and they share a mechanism: the gradual development of stone-working technique in Egypt across the Predynastic and Early Dynastic. The disagreement is over when that development crossed the threshold required by the monument, not over whether it occurred — it proposes a specific candidate population, a specific construction window, and a specific cultural context for the monument's original purpose. The framework derives from the Zep Tepi Series (Papers I–III), which independently documented the Shemsu Hor: a Saharan pastoral population integrated at Hierakonpolis by approximately 3800 BCE, spreading northward through the Nile Valley over the following six centuries, documented as reaching Buto in the western Delta by approximately 3200 BCE. The Giza plateau sits at the geographic midpoint of this documented expansion corridor, during the precise climate window now confirmed by near-Giza paleoclimate proxies to have produced episodic high-energy rainfall capable of generating the observed erosion.

The paper is structured as a hypothesis, not a conclusion. It derives seven specific predictions from the pre-existing Zep Tepi framework and tests the Sphinx against them. It explicitly states what would falsify it. It engages directly with the strongest conventional counter-evidence, including the Lehner–Aigner geological block-matching, the AERA construction sequence documentation, and the causeway alignment argument. Its claim is not that the Sphinx is certainly Predynastic, but that the known anomalies are more coherently accommodated by the Predynastic origin framework than by the Fourth Dynasty attribution — and that the candidate population, period, and cultural context are now sufficiently documented to justify formal physical testing. The argument of this paper is consilient: it draws on independent evidence from Egyptology, geology, archaeology, palaeoclimatology, and archaeoastronomy. No single line of evidence proves a Predynastic origin for the Sphinx. The case rests on convergence — multiple disciplines, each with its own peer-reviewed literature and standards of evidence, documenting anomalies that are individually puzzling under the Fourth Dynasty attribution and collectively coherent under a Predynastic origin framework. As Whewell (1840) first formalised and Wilson (1998) revived in modern philosophy of science, when independent lines of evidence from different domains converge on a single explanation, that convergence itself constitutes a stronger inferential warrant than any single line could provide. Readers from different disciplines are invited to evaluate the evidence within their own expertise and assess whether the convergence is better explained by a Predynastic origin or by the conventional Fourth Dynasty attribution.

1. The Evidentiary Problem

The conventional attribution of the Great Sphinx of Giza to the Fourth Dynasty pharaoh Khafre (~2558–2532 BCE) is more tenuous in the primary literature than popular accounts suggest. Selim Hassan, the first native Egyptian professor of Egyptology at Cairo University, personally excavated the Sphinx enclosure and stated this plainly:

"Taking all things into consideration, it seems that we must give the credit of erecting this, the world's most wonderful statue, to Khafre, but always with this reservation: that there is not one single contemporary inscription which connects the Sphinx with Khafre; so, sound as it may appear, we must treat the evidence as circumstantial, until such time as a lucky turn of the spade of the excavator will reveal to the world a definite reference to the erection of the Sphinx."

(Selim Hassan, The Sphinx: Its History in the Light of Recent Excavations, Government Press, Cairo, 1949)

That lucky turn has not come in the seventy-five years since. The case for Khafre remains where Hassan left it: circumstantial. Hassan also records what the ancient sources themselves held. Reviewing the New Kingdom and later testimony, he concludes that ‘the general opinion of the ancients was that the Sphinx was older than the Pyramids’, and that they may have dated it ‘to the dynasty of the semi-divine kings known as the “Followers of Horus”’ (1949, p. 79) — a dynasty he glosses as the semi-divine beings who succeeded the gods and preceded the historical kings. He notes in support that Amenhotep II’s limestone stela refers to the ‘Pyramids of Hor-em-akhet’, a form of words that on Hassan’s reading may indicate that Amenhotep considered the Sphinx older than the pyramids beside it (1949, p. 76). Maspero reached the same placement before revising it: the Great Sphinx Harmakhis, he wrote, ‘has mounted guard over its northern extremity ever since the time of the “Followers of Horus”’ (The Dawn of Civilization, p. 247, quoted at Hassan 1949, p. 85), a position he later abandoned in favour of Khafre. The identification advanced in this paper is therefore not without precedent in the mainstream literature: two Egyptologists — one of them the excavator of the enclosure — record the Shemsu Hor as the tradition’s own answer to the question of who made the monument.The strongest contemporary statement of the opposing view should be set out before the anomalies, because it is not merely traditional. Hawass, who directed the Sphinx conservation project, writes in the standard reference that the monument “has traditionally been dated to the reign of this king” on the grounds of its location near Khafre’s complex and the similarity of the Sphinx Temple to Khafre’s valley temple — but then goes further, on evidence rather than tradition: “The recent conservation project of the Great Sphinx has revealed many parts of its core and permitted close examination of its composition. The sphinx was indeed an element of the master plan of Khafre’s pyramid complex” (Hawass 1999, in Bard 1999). He describes the method as quarrying a U-shaped ditch around a chosen site, leaving a standing rock core which became the sphinx, with the removed stone possibly used in the pyramid and temples.That is the case this paper must answer, and it is answered narrowly rather than dismissed. Nothing in the quarrying description requires that the core was first isolated in the Fourth Dynasty; a ditch cut around an existing landform, or the enlargement of one already cut, produces the same section. What the conservation project establishes is that the Sphinx and Khafre’s complex were integrated — which this paper accepts, and which the Fourth Dynasty reworking proposed below requires. The disagreement is not about whether Khafre’s builders worked on the Sphinx. It is about whether they began it. The following facts are undisputed or near-undisputed in the scholarly literature.

The Sphinx exists at Giza, carved from the local Eocene limestone bedrock, facing east. The enclosure walls display erosion patterns that at least two independent geologists attribute to water action (Schoch 1992; Dobecki and Schoch 1992; Reader 2001a, 2026). No Old Kingdom inscription records its construction. By the first textual reference — the Dream Stele of Thutmose IV (~1400 BCE), erected between its paws — it is already buried up to the neck in sand and requires clearing (Hawass 1999, in Bard 1999). The head is disproportionately small relative to the body. The Sphinx Temple was never completed and no Sphinx priesthood appears in any Old Kingdom tomb at Giza. Physical evidence suggests the construction was abandoned mid-task: partially quarried bedrock remains at the site, and AERA documents the temple was never put into use, with construction debris still inside (AERA, aeraweb.org/khafres-monuments/, “Khafre’s Monuments as a Unit”; Hawass and Lehner field observations, 1978). A published account of the same evidence is available. Reader, summarising Ricke, records that a seam can be identified running through the masonry of all four corners of the Sphinx Temple, marking the outside of the walls in its first building phase; the north and south colonnades were added after the interior had been largely finished with granite sheathing, and for that addition great limestone core blocks were added to the outside corners of the temple, which were never finished off. The abandoned core blocks found beneath the Amenhotep II temple belong to this

second phase, which the associated pottery dates to the Fourth Dynasty (Reader 2002, JACF 9: 5–21, citing Ricke 1970).

No Sphinx Cult in the Old Kingdom

AERA — the primary establishment-level research body at Giza — documents the following: construction debris was never cleared from the interior of the Sphinx Temple; no titles of priests or priestesses of the Sphinx exist in any of the hundreds of Old Kingdom tombs at Giza; and the unfinished state suggests the temple was never put into use (AERA, aeraweb.org/khafres-monuments/, "Khafre's Monuments as a Unit"). The point is sharpened by when the cult evidence does begin. The standard reference records that the four large masonry constructions attached to the northern and southern sides of the Sphinx are read as chapels for Osiris and other deities, on the evidence of a statue base of Osiris — and that both the chapels and the statue base date to the New Kingdom. Further conservation followed in the 26th Dynasty, when the Sphinx may also have been painted, and again in the Roman period, when a layer of brick-sized protective stones was added to the paws and flanks (Hawass 1999, in Bard 1999). The monument therefore has a documented cult, a documented priesthood of the deities housed beside it, and a documented restoration history — all of it beginning in the New Kingdom, more than a millennium after the reign to which the carving is conventionally assigned, and none of it in the Old Kingdom. This absence is anomalous within the Giza necropolis itself: Khufu's pyramid had documented Old Kingdom priests holding titles such as "priest of Khufu who presides over the pyramid Akhet-Khufu" (Nykahap, as documented in Old Kingdom mastaba inscriptions at Giza; cf. Reisner, G.A. 1942, 'A History of the Giza Necropolis,' Vol. I, Harvard University Press; Junker, H. 1929–1955, 'Gîza,' Vols. I–XII, Austrian Academy of Sciences). Khafre's mortuary complex had active cult activity documented in statuary, inscriptions, and priestly titles. The Sphinx — supposedly the most prominent element of the same complex — has no such documentation. The absence is not general to the Old Kingdom; it is specific to the Sphinx within a necropolis where other monuments were demonstrably maintained and documented. The Sphinx cult was only "activated" as a royal tradition more than a millennium later, during the New Kingdom 18th Dynasty (ARCE Sphinx Mapping Project, 2023). Fourth Dynasty pharaohs were exhaustive record-keepers: the Diary of Merer documents pyramid logistics in daily granular detail. The claim that the same administrative culture built the most prominent monument on the plateau, established no priesthood, never cleared construction debris from the adjacent temple, and allowed it to become buried — all while producing no record of any of it — requires the accumulation of multiple special explanations. A Predynastic origin model requires fewer.

The Face Attribution Is Contested

The face attribution remains explicitly unresolved among Egyptologists. Mark Lehner (1991, Archaeology of an Image: The Great Sphinx of Giza, Yale Ph.D. dissertation; 1997, The Complete Pyramids) and Rainer Stadelmann (1985, pp. 124–126; 1999, pp. 872–878; 2003) present different pharaonic identifications — Khafre and Khufu respectively — and the absence of consensus is documented across these primary sources. Even the conventional Khafre identification is acknowledged to rest on circumstantial evidence (Hassan 1949; Zivie-Coche 2002).

The Yardang Possibility

This finding is directly relevant to the Giza plateau. The Sphinx is carved from the Mokattam Formation, which consists of interbedded strata of varying hardness (Gauri 1995; Fitzner et al.

2002). The upper Member II beds — from which the Sphinx body is carved — contain harder, more resistant limestone interspersed with softer, more porous layers. Gauri and colleagues describe those alternating hard and soft strata in the course of arguing against an early date — they attribute the rounded profile to salt weathering in an arid environment and hold that the Sphinx may still be regarded as of pharaonic origin — and the lithological description is used here independently of that conclusion. This non-uniform composition is precisely the condition under which yardang formation is experimentally confirmed to produce sphinx-like morphologies (Boury, Weady and Ristroph 2023).

If the Sphinx's overall form was already partially pre-shaped by natural erosion, the quantity of stone removal required to produce a recognisable monument would be significantly reduced: carvers would be refining an existing natural form rather than creating entirely from scratch. A pastoral population with limited sustained labor capacity could achieve a monument from a yardang starting point that would otherwise require substantially more effort from an undifferentiated rock surface. This interpretation does not weaken the human agency of the carving act; it makes that act more achievable within the Capacity Gap constraints documented in Phase Zero.

Whether the Giza limestone outcrop was a natural yardang before carving cannot be confirmed from current evidence, but the possibility strengthens rather than contradicts the pre-state constructive argument. The experimental confirmation of yardang formation in heterogeneous materials (Boury, Weady and Ristroph 2023) provides independent geomorphological support for the hypothesis that the Sphinx's basic form required less labor than a fully artificial carving would demand. The weight this can bear is limited by the authors' own statements: their laboratory system is 'at best inspired by and qualitatively related to landforms', their Reynolds numbers are 'orders of magnitude lower than those that occur for natural yardangs', clay eroding in flowing water follows a shear-stress law rather than the abrasion and attrition processes of wind-driven erosion, and they conclude that their findings 'hardly resolve the mysteries behind yardangs and the Great Sphinx'.

This staged structure — natural formation first, carved body second — is not unique to the yardang hypothesis above. Reader (1997, revised 1999; published as Reader 2005, Current Research in Egyptology II: 47–56), working from geomorphological and archaeological evidence entirely independent of the corridor framework, proposes that a naturally occurring rock outlier at Giza achieved local religious significance during the Predynastic period before being carved into a stone lion body during the latter part of the Early Dynastic Period, as masonry technique and solar-cult theology matured. Reader's own reconstruction of the original ground surface has the Sphinx quarried from a low hill rising to c. 31.5 m, its summit falling steeply to the Lesser Wadi to the north and eastward toward the Nile Valley and the direction of sunrise (2026, Appendix A, p. 263) — a pre-existing natural prominence that requires no wind mechanism. Reader's position on natural shaping has since altered: in his 2026 monograph (p. 186) he states that he struggles to accept theories in which the Great Sphinx was originally a natural feature initially shaped by the wind, attributing the head's form instead to local topography, the Lesser Wadi and the main fissure. Reached independently, from a different evidentiary base, this sequence reproduces the same underlying structure proposed here.

2. The Population at Giza Before the Pyramids: The Maadi Culture

The only named Predynastic culture archaeologically confirmed at the Giza plateau itself is the Maadi culture — the dominant Lower Egyptian cultural tradition of the fourth millennium BCE. Maadi-type storage jars have been recovered at the foot of the Great Pyramid, and an additional

Maadi settlement was confirmed near Giza during the Greater Cairo Wastewater Project. Their type site lies approximately 15 kilometres south of Giza; Hartung's renewed radiocarbon programme (2013, Paléorient 39(1)) places the settlement in the first half of the fourth millennium, from ca 3700/3600 to ca 3500 cal. BC in the western area, with an earlier beginning not excluded.

The Maadi culture manufactured stone vessels in basalt, alabaster, and limestone, demonstrating sustained controlled stone removal. They used copper tools including adzes and cutting implements, and yielded the largest assemblage of copper finds known from Predynastic Egypt — malachite, needles, awls, three or four axes and three ingots (Rizkana and Seeher 1989). Whether copper was worked at Maadi, as distinct from arriving there, is an open question in the specialist literature and should not be asserted here; the settlement's trade economy, craft specialisation and domesticates are reported in the Italian expedition's excavation account (Caneva, Frangipane and Palmieri 1987, African Archaeological Review 5: 105–114). Hartung describes local copper working at the site as only 'perhaps' attested (2013). Hauptmann (2017), who supervised the analyses, addresses the problem in a study titled 'Copper and ores from elsewhere and the question of metallurgy at Maadi', and reports the Maadi ingots to be very pure with little arsenic, consistent with ore bodies at Wadi Faynan, Timna or Wadi Amram in the Wadi Arabah, or in south-western Sinai (2017, p. 154). Pfeiffer has further described casting moulds from the Chalcolithic settlement of Tell Hujayrat al-Ghuzlan near Aqaba whose shape could have produced the Maadi ingots (2013, pp. 321–323), raising the possibility that the ingots were cast in the Wadi Arabah and reached Maadi as finished metal. What the assemblage establishes is that copper in quantity was present and in use at a settlement fifteen kilometres from Giza; it does not establish smelting on site. They maintained active trade connections with Canaanite populations and received Upper Egyptian imports including Naqada-type stone palettes — placing them in active cultural exchange with the southern population tradition relevant to the Zep Tepi Series (Hartung 2013; Rizkana and Seeher 1987–1990). Their dates fall within the corridor window of 3800–3100 BCE, though — as §3 sets out — the settlement closes before the construction estimate of 3400–3300 BCE rather than spanning it; they worked stone, Hartung recording basalt and limestone as raw materials for stone-vessel manufacture at the site; and they were positioned at Giza during the corridor window. Karl Kromer's 1971 excavation at Giza recovered Predynastic and Early Dynastic pottery and flints from settlement debris south of the Great Pyramid — material subsequently removed during the construction of Menkaure's pyramid complex (Kromer, K. 1978, Siedlungsfunde aus dem Frühalten Reich in Gizeh, Österreichische Akademie der Wissenschaften, Vienna; cited in Bietak, M. 1979, and documented by Lehner 1992). The Fourth Dynasty construction program therefore physically destroyed Predynastic evidence at Giza, which directly limits what we can expect to find. The capacity gap between stone vessel carving and figurative monumental sculpture is also addressed by the archaeological record from the Shemsu Hor's own documented integration site. HK6 at Hierakonpolis — the site Paper III of this series documents as exhibiting five Saharan pastoral markers in the 3800–3100 BCE window — has yielded what excavation reports describe as the oldest known Egyptian statue (dating 3600–3500 BCE; Harrington, N., 2004, 'Human Representation in the Predynastic Period: The Locality HK6 Statue in Context,' in Hendrickx et al. (eds.), Egypt at its Origins, OLA 138, Leuven: 26–43), a near life-sized limestone figure associated with an elite Naqada IIB tomb. The elite cemetery has been published in successive campaign reports (Friedman, R.F., Van Neer, W. and Linseele, V. 2004, 'Animal burials and food offerings at the Elite Cemetery HK6 of Hierakonpolis,' in Hendrickx, S. et al. (eds.), Egypt at its Origins, OLA 138. Leuven: Peeters, pp. 67–130; Friedman, R.F., Van Neer, W. and Linseele, V. 2011, 'The elite Predynastic cemetery at Hierakonpolis: 2009–2010 update,' in Egypt at its Origins 3, OLA 205. Leuven: Peeters, pp. 157–191; excavation at the cemetery continued, with the 2014 season reported in Friedman, R.

2014, ‘Discoveries in the Predynastic Cemetery at HK6 during the 2014 season,’ Hierakonpolis Online). Figurative stone carving of high quality is attested at Hierakonpolis more broadly, though from a later and separate context: the Main Deposit on the town mound, dated to Naqada III, yielded twelve stone scorpion models in limestone, serpentine, malachite and rock crystal which McNamara describes as ranking among the finest sculpture of the time, and which he relates back to the animal symbolism of the HK6 elite cemetery (McNamara, n.d.). Those objects postdate the window proposed here, and it is the HK6 statue alone that establishes figurative stone sculpture within it. The population associated with HK6 therefore produced monumental figurative stone sculpture within the proposed window, on the evidence of a single but near life-sized statue. The gap between craft stone-working and figurative carving was already bridged at the Shemsu Hor’s primary site.

A clarification of roles is essential: the Maadi culture are not proposed as the builders of the Sphinx. They establish that the Giza plateau was a known, technologically capable landscape during the proposed construction window. The candidate builders are the Shemsu Hor — the Saharan pastoral population integrating at Hierakonpolis and spreading northward, documented in Section 4. The Maadi represent the existing Lower Egyptian population; the Shemsu Hor are the arriving corridor population whose northward expansion the Zep Tepi framework documents. These are distinct cultures whose geographic zones overlapped during the proposed window. The Maadi culture establishes that the Giza plateau was occupied during the earlier part of the corridor window by a population with the technological capacity for limestone carving. That capacity extends beyond stone: Köhler (2010, in Wendrich (ed.), Egyptian Archaeology, 39) records that the earliest evidence in Egypt for the full sequence of copper metallurgy — ore, cast ingots and finished utensils — comes from early Chalcolithic Maadi (citing Rizkana and Seeher 1989: 13–18; Seeher 1991), and that southern Upper Egyptian ceramic workshops were already distributing as far north as Maadi (citing Rizkana and Seeher 1987: 29–31). They are not proposed here as the Sphinx’s builders — their material culture shows no evidence of the lion-iconographic tradition, the astronomical orientation knowledge, or the monumental sculptural ambition that the monument exhibits. The Maadi are the archaeological baseline: they prove the plateau was inhabited and that stone-working capacity was present. The Shemsu Hor, documented in Papers I–III — and treated in the standard reference literature under Horusgeleit (von Beckerath 1980, Lexikon der Ägyptologie III, 51–52) — are the population whose iconographic, astronomical, and architectural traditions match what the monument required. Whether the two populations interacted, merged, or succeeded one another at Giza specifically is not established by current evidence. What the Maadi demonstrate is that the plateau was not empty. What the Shemsu Hor framework provides is the cultural context for what was built there. The corridor migration model itself has independent external validation from scholars entirely outside this series. Kuper and Kröpelin (2006, ‘Climate-controlled Holocene occupation in the Sahara: motor of Africa’s evolution,’ Science 313(5788): 803–807, DOI: 10.1126/science.1130989), drawing on radiocarbon data from 150 archaeological excavations across the Eastern Sahara, document that ‘the exodus resulting from gradual desiccation since 5300 BCE’ directly triggered population movement toward the Nile Valley, and that ‘southward shifting of the desert margin helped trigger the emergence of pharaonic civilization along the Nile.’ Drake, Blench, Armitage, Bristow and White (2011, ‘Ancient watercourses and biogeography of the Sahara explain the peopling of the desert,’ Proceedings of the National Academy of Sciences 108(2): 458–462, DOI: 10.1073/pnas.1012231108) demonstrate that the Holocene Sahara contained ‘a series of linked lakes, rivers, and inland deltas comprising a large interlinked waterway’ that channelled population movement across the desert during humid phases — with more species crossing via interior Saharan corridors than via the Nile route. The corridor migration framework proposed in Papers I–III therefore rests on a foundation confirmed

by independent peer-reviewed research in Science and PNAS, not only on the series' own internal evidence.

A palaeoecological study using sediment cores from the Khufu branch of the Nile at Giza provides the most direct published evidence for the presence of Eastern Saharan pastoral populations at the Giza plateau during the proposed window. Sheisha, Kaniewski, Marriner, Djamali, Younes et al. (2023, 'Feeding the pyramid builders: Early agriculture at Giza in Egypt,' Quaternary Science Reviews 312: 108172, DOI: 10.1016/j.quascirev.2023.108172) document palaeoecological indicators spanning the Predynastic period through the Islamic era, and conclude: 'transhumance tribes, originally from the Eastern Sahara, settled along the Giza Plateau 5200 years ago, primarily engaging in herding and, more sporadically, agriculture.' This is peer-reviewed palaeoecological evidence from PNAS's sister journal of Eastern Saharan transhumant pastoralists at the precise geographic location this paper proposes as a construction site. Their 5,200-years-ago figure corresponds to approximately 3200 BCE, which falls inside the corridor window but postdates the construction estimate; it evidences continuity of the population at Giza rather than its presence at the moment of carving. The Sheisha et al. (2023) study further documents copper metallurgy contaminants consistent with Naqada IIIA–IIIB occupation of the Giza plateau at 3265–3185 BCE — placing metalworking-capable populations at Giza within the corridor window, though one to two centuries after the construction estimate. This is the palaeoecological corroboration the Shemsu Hor framework predicts: a Saharan-origin pastoral population present at Giza during 3800–3100 BCE.

3. Population Continuity: The Naqada Expansion and Lion Iconography

The Naqada cultural complex spread northward throughout the fourth millennium BCE, replacing the Maadi-Buto culture by approximately 3200 BCE (Shaw 2003; Midant-Reynes 2000). The mechanism of that expansion remains contentious. Köhler herself, reviewing the theoretical literature, describes state formation in Egypt as 'a multi-linear process that took place over a long period, in different parts of Egypt, with different causes and agents and at different times', and closes by noting that 'there is no scholarly consensus on any of the points discussed above' (Köhler 2010, in Wendrich (ed.), Egyptian Archaeology, 36–54). Stevenson's review of the field likewise records a spectrum of opinion on the relative importance of population movement, acculturation and mutual interaction, and cautions against reducing the question to a dichotomy between them (2016, Journal of Archaeological Research 24(4): 441). What is no longer contentious is the older alternative — on Stevenson's assessment, models proposing complete Upper Egyptian ascendancy over Lower Egyptian communities are no longer tenable in view of Delta excavations demonstrating complex sequences of community affiliation. The corridor model advanced here does not require a verdict between movement and acculturation; it requires only that the expansion was not a conquest, which is the point on which the field has converged. Mączyńska goes further on the terminology, holding that the interaction is better described as Naqadian expeditions than as a Naqadian expansion, since there is no evidence that the Naqadians exercised authority or any other form of dominance at the northern sites in this early period (2014, Studies in Ancient Art and Civilization 18: 25–45). She reaches the same negative conclusion from the material itself, holding that there is at present no archaeological evidence for a Naqadian expansion involving arrival in the north at the end of Naqada II and the absorption or elimination of the local culture, since the pottery, flint and stone inventories of Lower Egyptian sites show no sudden change of the kind a cultural replacement would produce, and Tell el-Farkha and Buto instead show steady, uninterrupted local development (2013, Studies in African Archaeology 12: 205). Within that spectrum, Köhler (1995, Göttinger Miszellen 147: 79–92) argues from intensive ceramic analysis at Buto itself —

the Shemsu Hor's documented Lower Egyptian capital — that 'the archaeological evidence does not show the Naqada expansion to have been a military expansion', and that the process took approximately 500 years. That order of magnitude is reached independently elsewhere: Chłodnicki, Fattovich and Salvatori (1992), reporting the Italian mission's excavations at Tell el-Farkha, hold that state formation implied a time span of more than 500 years (citing Hassan 1988), and that the accumulated Delta evidence compels a review of the traditional theory of a dynastic conquest of the Delta in favour of a wave-like progressive south–north population movement. Von der Way's excavations at Buto confirm this directly: Lower Egyptian pottery declines steadily through the transitional layers as late Naqada II wares increase, until the local wares are effectively displaced (Brovarski 2016, reporting von der Way's Buto sequence). The pace of that displacement differed by site, and the published proportions are measured differently at each. At Tell el-Farkha, Naqada-type beer jars of Petrie's R81 and R84 forms are already present at roughly ten per cent of diagnostic sherds in the Lower Egyptian phases 1 and 2, and that proportion holds constant across both, while the lemon-shaped jars often treated as a Lower Egyptian diagnostic still account for some forty-five per cent of closed forms — though Mączyńska notes that Köhler has questioned whether those jars mark cultural affiliation at all, since they are also common in the south (2013, Studies in African Archaeology 12: 122). Recent excavation at Buto supports absorption rather than replacement from the ceramic fabrics themselves. Hartmann (2017, in Midant-Reynes, Tristant and Ryan (eds), Egypt at its Origins 5, OLA 260, 612–613) reports that the distinctive fibre-tempered Nile clay fabric characteristic of the Lower Egyptian culture, which at contemporary eastern Delta sites disappears widely already at the beginning of Naqada III, comprises under three per cent of the Naqada IIIB assemblage at Buto and can there be traced constantly in the form of simple holemouth jars until Naqada IIIC1 contexts (citing Köhler 1992: 13–14; the definitive Buto ceramic sequence is Köhler 1998). Lower Egyptian potting tradition therefore persists at Buto into the First Dynasty, several centuries after Naqada material culture becomes dominant there. This is demographic absorption over five centuries. Pennington, Wilson, Sturt and Brown (2020, World Archaeology 52(4): 550–565) identify the Lower Egyptian–Naqada Transition (LE-NT) at approximately 3350 BCE as the inflection point of this demographic shift. Hartung's radiocarbon programme at Maadi (2013, Paléorient 39(1): 177–191) places the Giza-adjacent settlement in the first half of the fourth millennium: founded during Naqada I, 'usually set between ca 3900 cal. BC to 3650 cal. BC', with the western part of the settlement 'probably populated from ca 3700/3600 cal. BC to 3500 cal. BC' and a total life span of 'ca 200–300 years', abandoned in late Naqada IIB or the beginning of Naqada IIC. He adds that 'an earlier date for the beginning of the settlement or a slightly later date for its abandonment without external contacts cannot be ruled out', and — directly relevant here — that 'the end of Maadi took place only shortly before the first graves with typical Upper Egyptian Naqada equipment (indicating the arrival of the Naqada culture in northern Egypt) appeared in Lower Egypt'. Maadi therefore does not span the construction estimate; it ends as the northward arrival begins, immediately before the construction estimate advanced here. The same placement is reached independently in the Delta chronology synthesis of Jucha and Mączyńska (2011, Archéo-Nil 21: 36), which records that Maadi was abandoned at a point corresponding to Naqada IIC in the south, and in Mączyńska's monograph on the Lower Egyptian culture (2013), whose three-phase scheme assigns Maadi to the early phase, Naqada I–IIAB, closing before Naqada IIC begins.

The Giza plateau itself was occupied during this window. Maadi-type storage jars have been recovered at the foot of the Great Pyramid, and a Maadi settlement was confirmed near Giza during the Greater Cairo Wastewater Project. Karl Kromer's 1971 excavation at Giza recovered Predynastic and Early Dynastic pottery and flints from settlement debris south of the Great Pyramid, material subsequently removed during Fourth Dynasty construction (Kromer 1978). Sheisha et al. (2022, PNAS 119(37), DOI: 10.1073/pnas.2202530119) provide an 8,000-year

fluvial reconstruction showing a high-stand level on the Giza branch concomitant with the African Humid Period, with a local termination of the AHP estimated at 3550 ± 80 BCE, a significant drop at 3450–3250 ± 80 BCE and a later peak at 2950 ± 80 BCE. The same paper states directly that ‘conglomerations of predynastic and early dynastic settlements (3550–3250 BCE) existed along the east bank of the Khufu branch and on the floodplain between the paleo-channel and the pyramid plateau’, and speaks of ‘the environmental attractivity of Giza during the fourth millennium’, which they attribute to falling fluvial levels after the end of the African Humid Period. Their supporting references are Jones (1995, MDAIK 51: 85–98) and, directly to the point, El-Sanussi and Jones (1997, ‘A site of the Maadi culture near the Giza pyramids’, MDAIK 53: 241–253). Predynastic occupation of the Giza floodplain within the proposed window is therefore not an inference drawn here but a published finding, corroborated independently by the Kromer material and by the Maadi vessels from Menkaure’s valley temple (Mortensen 1985). Mączyńska’s site inventory of the Lower Egyptian culture lists Giza among its findspots, citing Mortensen 1985 and El-Sanussi and Jones 1997, and records an assemblage of nine pottery vessels with a basalt cup fragment recovered near the Mansuriyah Canal north of the pyramids, which she assigns to the older phase of the culture (2013, Studies in African Archaeology 12: 17, 160–161). Two qualifications belong with that: the older phase precedes the construction estimate advanced here, and Mączyńska classes the Giza material as a chance find of fragmentary and accidental character rather than an excavated settlement, entering it in her inventory with a query. Kuper and Kröpelin (2006, Science 313(5788): 803–807) document that the 'exodus resulting from gradual desiccation since 5300 BCE' directly triggered population movement toward the Nile Valley. Drake et al. (2011, PNAS 108(2): 458–462) demonstrate that the Holocene Sahara contained linked lakes and inland deltas channelling population movement, with more species crossing via interior Saharan corridors than via the Nile route.

Stevenson records ten new cemetery sites bearing characteristic Upper Egyptian material culture appearing northward in the Fayum, Memphite and eastern Delta regions from Naqada IIC (2016, Journal of Archaeological Research 24(4): 440, citing Hendrickx and van den Brink 2002), and notes that it was not simply the material culture that spread but the practices associated with its use, including mortuary displays and treatments of the body. In the same phase the record at Hierakonpolis breaks: the Wadi Abu Suffian cemeteries are abandoned, and no Naqada IIC–D phase is attested at HK6 (Stevenson 2016, pp. 436, 442, citing Friedman 2008a). Further north, the earliest tombs at Abusir el-Meleq, at the Fayum entrance some 85 km south of Giza, are Naqada IID and follow Naqada burial orientation — left side, head south (Buchez and Midant-Reynes 2007, BIFAO 107: 57, citing Scharff 1926).

A 2025 whole-genome study of an Early Dynastic to Old Kingdom Egyptian (Morez Jacobs, Irish, Cooke et al. 2025, ‘Whole-genome ancestry of an Old Kingdom Egyptian,’ Nature 644(8077): 714–721, DOI: 10.1038/s41586-025-09195-5) documents the first successfully sequenced Early Dynastic individual from Egypt, radiocarbon dated to 2855–2570 BCE. His genome shows approximately 77.6% North African Neolithic ancestry and approximately 20% eastern Fertile Crescent admixture. This is a single genome and cannot by itself establish a population signature; what it shows is that one Early Dynastic individual carried an ancestry profile predominantly derived from the North African Neolithic populations whose demographic expansion the Naqada tradition documents, not from sub-Saharan Africa or from population groups foreign to the Nile corridor. The North African Neolithic ancestry component is the same ancestral lineage reported by Salem et al. (2025, Nature 641(8061): 144–150, DOI: 10.1038/s41586-025-08793-7) in two Pastoral Neolithic individuals from the Takarkori rock shelter, Tadrart Acacus, southwestern Libya. Their finding requires careful statement, because it cuts two ways. The Takarkori individuals show close genetic affinity to Northwestern African

foragers, which is consistent with a west-to-east relationship across the Saharan corridor proposed here. But the authors also report no substantial ties to sub-Saharan lineages, and conclude that pastoralism spread into this deeply divergent and long-isolated North African population by cultural diffusion rather than by large-scale migration. Their argument is therefore against the Green Sahara as a north–south migration corridor. The present framework proposes a west–east movement, which their data do not address directly; the Northwestern African affinity supports it, and their diffusion model counsels caution about inferring population movement from cultural continuity.

Two intervals are distinguished throughout this paper and should not be conflated. The corridor window is 3800–3100 BCE, the span of the Shemsu Hor integration and northward movement; the construction estimate is 3400–3300 BCE, a narrower interval within it. Where the text refers to 'the proposed window' without qualification, the corridor window is meant. The corridor integration sequence (3800–3100 BCE) spans the entire demographic process: from the Shemsu Hor's arrival at Hierakonpolis to the completion of cultural dominance throughout Lower Egypt, with Giza at the geographic midpoint of this documented northward population movement. The Giza plateau is the northernmost prominent limestone escarpment on the west bank before the Nile Valley opens into the Delta — rising approximately 60 metres above the surrounding floodplain, the most geographically distinctive feature between the two Shemsu Hor nodes, and the only significant outcrop of workable nummulitic limestone at commanding elevation in this section of the corridor.

Lion as Royal Symbol: The Predynastic Iconographic Chain

A lion-bodied monument at Giza is consistent with an Upper Egyptian iconographic tradition that arrived in Lower Egypt precisely through the Naqada expansion. The chain is documentable from peer-reviewed sources:

The Painted Tomb (Tomb 100) at Hierakonpolis, dating to approximately 3500–3200 BCE, depicts a lion symbolising the king preying on his enemies — one of the oldest known examples of narrative painting in Egypt. Huyge (2014, Archéo-Nil 24) notes the tomb's final composition may reflect a Naqada III reworking of an original Naqada IIC design, but even on the later dating the imagery is fully Predynastic and documents lion-as-king symbolism several centuries before the Fourth Dynasty. The Battlefield Palette (Naqada III) depicts a larger-than-life lion attacking defeated enemies — widely interpreted as the king identified with a lion (Raffaele 2010). The Gebel Tarif knife and the Hierakonpolis Palette use the lion in the same manner dynastic artwork would use it, depicting the lion in its pounce upon prey. Lion imagery is documented from approximately 3500 BCE in Predynastic elite contexts, as established by Huyge (2014, Archéo-Nil 24) through the Painted Tomb iconographic tradition at Hierakonpolis. Mehit — an ancient lion-headed goddess associated specifically with Hierakonpolis — is among the earliest attested feline deities in Egypt, predating Bastet and Sekhmet (Wilkinson, R.H. 2003, The Complete Gods and Goddesses of Ancient Egypt, Thames and Hudson). The lion as royal symbol therefore has a documented Naqada-period Upper Egyptian origin, and it arrived in Lower Egypt as part of the northward Naqada cultural expansion that replaced the Maadi-Buto complex by approximately 3200 BCE. This tradition continued into monumental stone immediately following the proposed construction window. The Min temple at Koptos yielded not only the 4-metre colossi but also The Koptos lions — two monumental limestone lion figures dated by some scholars to the late Naqada II period (c. 3300–3200 BCE) and by others to the Early Dynastic Period (c. 3100–2900 BCE) (Petrie Museum, UCL, accession UC 35294; UCL Digital Egypt; Petrie 1896). The dating remains debated, but even the later Early Dynastic placement places them within a generation of the proposed Sphinx construction window. The Petrie Museum describes them as part of 'the first group of monumental sculpture' in Egypt. A

lion in monumental stone at a sacred site, placed within a generation of the proposed Sphinx construction window, is consistent with the lion-guardian tradition the Sphinx hypothesis proposes was carried north from the Hierakonpolis integration zone.

4. The Shemsu Hor: The Candidate Population

The Zep Tepi Series (Papers I–III, Levy 2026) documents a corridor migration of Saharan pastoral populations into the Nile Valley during the African Humid Period collapse (approximately 3800–3100 BCE), integrating at Hierakonpolis with six independent lines of evidence across paleohydrology, genetics, archaeology, archaeoastronomy, textual criticism, and climate chronology. The population Egypt itself remembered for this window — the group occupying the non-optional structural slot between divine time and human kingship in every king-list tradition across fifteen centuries of independent sources — was the Shemsu Hor, the Followers of Horus. This section argues that this population is the most parsimonious candidate for a monument at Giza during the proposed window.

Lower Egyptian Presence: Buto and the Western Delta

The Shemsu Hor are not solely an Upper Egyptian tradition. Sethe's (1927) editorial definition — the standard Egyptological identification — explicitly describes them as "the prehistoric kings of Hierakonpolis and Buto, who ruled before Menes, who worshipped the god Horus" (Sethe 1927, cited in Thutmose I Karnak inscription commentary; Levy 2026, Paper III, Section 3.9). W.M. Flinders Petrie (1920, A History of Egypt, Vol. I, 9th edn) documented that following the arrival of the Shemsu Hor, two kingdoms were established in Southern and Northern Egypt, with capitals at Nekheb-Nekhen (Hierakonpolis) and Per-Uatchet (Buto) respectively. Per-Uatchet (Buto) is in the western Delta — Lower Egypt — in the same geographic zone as Giza.

The Waddell's editorial footnote on Manetho Fragment 1 (Waddell 1940, Loeb Classical Library) records a scholarly tradition — traceable through Breasted (1931) and Childe (1934) — identifying the Shemsu Hor as a historical falcon clan whose origin was in the western Delta. This is Waddell's interpretive gloss on Manetho's text, not a statement in Manetho's original, and is cited here as evidence of a persistent scholarly tradition rather than as primary testimony. The Pyramid Texts themselves reference "kings of Lower Egypt who were in Pe" (Pe being the ancient name of Buto) and associate Pe with the Horus falcon cult — establishing Horus worship in both Lower and Upper Egypt from the Predynastic period (Faulkner, R.O. 1969, The Ancient Egyptian Pyramid Texts, Oxford University Press; Allen, J.P. 2005, The Ancient Egyptian Pyramid Texts, SBL Press). Giza, on the limestone plateau immediately south of the Nile Delta, lies within the geographic zone of this Lower Egyptian Horus tradition.

Horus of Buto: The Lion-Headed Lower Egyptian Horus

Perhaps the most striking iconographic convergence for this hypothesis is Horus as worshipped specifically in Buto — the western Delta, the Lower Egyptian Horus tradition. In later temple reliefs, Horus of Buto appears lion-headed, fusing falcon and lion iconography in his wrathful, avenging aspect, aligning with fierce deities like Sekhmet and Ra-Horakhty (Hart 1986, pp. 100–102; Wilkinson 2003). The earliest surviving physical evidence for this form dates to Dynasty XXV–XXVI (c. 700–500 BCE). This Late Period attestation requires the same qualification applied to the Edfu Building Texts: Late Period evidence does not establish a Late Period concept. The Dynasty XXV Nubian pharaohs and Ptolemaic period are documented archaizers, encoding older theological traditions in later forms. As Paper III (Levy 2026, Section 3.2) establishes, Ptolemaic builders at Dendera cite their architectural plans as derived from 'a

leather roll from the time of the Followers of Horus' — a named physical document. Section 8.3 of Paper III provides the corroborating physical evidence: the Edfu temple contained a working archive of 'many chests of books and large leather rolls' — the same category of object the Dendera builders cite. The two sections document the claim and its material grounding respectively. A parallel dynamic is proposed here: the lion-headed Buto form in Late Period statuary may represent an older theological concept, consistent with Dynasty XXV archaizing practice. The claim is qualified: the lion-headed Horus of Buto tradition is physically attested only in the Late Period; whether it encodes an older concept cannot be confirmed from physical evidence alone but is structurally consistent with Dynasty XXV–XXVI archaizing. A lion-bodied monument in the Buto geographic zone is consistent with this tradition, though the physical evidence is Late Period. Under the archaizing argument used elsewhere in this series (Paper III, Sections 3.2 and 8.3), this Late Period attestation may encode an older theological concept. Two mainstream alternative explanations deserve direct engagement. First, late theological synthesis: Egyptian religion frequently merged distinct deities in later periods without requiring continuity from an earlier unified form — Amun-Ra is the standard example — so the lion-headed Horus of Buto could be a genuinely Late Period innovation requiring no Predynastic antecedent. Second, regional Buto innovation: the lion-headed form could have emerged locally at Buto during the Late Period itself, independent of any earlier corridor tradition. Both alternatives are methodologically sound, and neither can currently be ruled out by evidence that begins only in Dynasty XXV–XXVI. On present evidence the archaizing explanation offered here and these alternatives are comparably strong. This line of evidence is therefore presented as a consistency note that survives alongside these alternatives, not as positive proof of Predynastic origin that supersedes them.

Attributed Architectural Knowledge

The Shemsu Hor are the only Predynastic group in the documented ancient world credited with findable physical architectural archives. Merneptah's Karnak inscription (c. 1210 BCE) states a temple was built "according to the plan of the ancestors from the time of the Followers of Horus, found in the ancient writings." Ptolemaic builders at Dendera cite "a leather roll from their time containing architectural plans" (Levy 2026, Paper III, Section 3.2). No other ancient king-list tradition — Sumerian, Babylonian, Hebrew, Vedic, Hittite — credits its Predynastic predecessors with recoverable physical architectural documents cited in professional scribal accountability contexts. A population that later generations credited with architectural plans preserved in institutional archives is a more parsimonious candidate for monumental construction than a population whose architectural capacities are undocumented.

The Pre-Writing Period and the Silence About the Sphinx

There are no written records of anything constructed in Egypt before approximately 3200–3100 BCE. The Sphinx's absence from Predynastic texts is therefore not anomalous — it is expected for any monument built before writing existed. The anomaly is the continued silence through the Old Kingdom, in a period of exhaustive record-keeping. That continued silence is what the Predynastic origin framework addresses: a monument built by a population that preceded literacy, inherited by early dynastic rulers, and never formally attributed because its construction predated the administrative systems that would have recorded it.

The Capacity Gap: Subtractive Carving and the Pastoral Builder

Estimates place Sphinx carving at approximately 100 workers over three years (Lehner, M. 1997, The Complete Pyramids, Thames and Hudson, p. 224; experimental carving work

conducted with R. Brown for the NOVA Sphinx documentary, referenced in Lehner's published fieldwork). Lehner himself maintains the Fourth Dynasty attribution for the Sphinx; his workforce estimates are used here strictly as a capacity baseline, independent of his own chronological conclusions. The quantitative contrast with the Great Pyramid is the core of the capacity argument:

Metric
Sphinx Carving
Total length
73.5 m (Lehner 1991)
Estimated limestone removed

~23,000 m^3 (range c. 17,000–30,000 m^3). No excavated-volume figure for the Sphinx has been published; the estimate is derived here from Lehner's survey dimensions (1991, Zenodo DOI 10.5281/zenodo.1203621: total length 73.5 m, height 20 m, width 19 m), with its assumptions stated so that it can be checked or replaced. Because the monument was cut down into bedrock, the quantity removed is not the bulk of the lion but everything that is not the lion within the block the carvers began with, together with the surrounding ditch. Shaping: the form is divided into three segments — forepaws and chest apron (c. 15 × 11 × 20 m), body and haunches (c. 48 × 19 × 12 m), head and neck (c. 10 × 19 × 20 m) — with the removed fraction of each bounding box taken as roughly 35, 30 and 72 per cent, the head requiring by far the most waste because a narrow neck must be freed from a full-width block; this yields c. 7,200 m^3. Enclosure: a U-shaped trench of c. 165 m perimeter (two long sides plus the rear) at 12 m wide and 8 m deep yields c. 15,800 m^3, the quoted range reflecting trench dimensions between 10 × 6 m and 15 × 9 m. The enclosure, not the statue, is the dominant term

Estimated workforce
~100 workers (Lehner 1997)
Estimated duration
~3 years (Lehner 1997)
Total man-hours
~900,000 (100 × 3 yrs × 300 days × 10 hrs). Against the volume above this implies a removal rate of c. 0.26 m^3 per worker-day — unremarkable for bulk quarrying of soft Member II limestone with stone pounders and copper chisels, without transport or lifting. It sits between the whole Great Pyramid operation at c. 0.04 m^3 per worker-day and the fine-carving rate of about one cubic foot per worker-week reported for Lehner and Brown's experimental work (Lawler 2006). Those two rates are not commensurable — one is bulk removal, the other detailed sculpting — and the workforce estimate used here is consistent with the former
Tool requirement
Flint chisels, copper chisels, dolerite pounders (Stocks 2003)
State apparatus required?
No — pastoral-scale organisation sufficient
Metric
Great Pyramid (comparison)
Stone volume
~2,590,000 m^3
Peak workforce
~10,000 workers (Lehner 2002)
Duration
~44–69 years (Phase Zero constraint analysis; Levy 2026)

Total man-hours
~660,000,000 (5,000 average workers × 44 yrs × 300 days × 10 hrs; average taken as half the documented peak of 10,000, across the lower bound of the duration range)
Ratio (Pyramid ÷ Sphinx)
~733× greater
State apparatus required?
Yes — full administrative infrastructure documented

The capacity argument establishes that the Sphinx is within the organizational range of a pre-state pastoral population. Capacity alone does not identify the builders — the argument for the Shemsu Hor specifically rests on the convergence of capacity with the iconographic tradition, the Wedjat cosmological framework, and the corridor geography documented in Sections 3–5: many populations could satisfy the workforce number, but only one documented Predynastic population combines that capacity with the lion-as-king iconography, the eastward equinoctial orientation, and the attested physical presence at the Giza corridor during the proposed window. The raw person-day estimate addresses total labour but not organizational logistics. A pastoral group mustering 100 people for a season also requires tool supply, water, food, and consistent supervision at a site with no permanent settlement. Two lines of evidence address this. First, the Maadi culture's copper trade network (Section 2) provides a plausible supply chain for arsenical copper chisels during the proposed window: Maadi was the earliest documented copper-working site in Egypt (German Archaeological Institute, Cairo), and isotopic analysis of Old Kingdom Giza copper tools traces one artefact's provenance to Predynastic Egyptian metalwork (Odler et al. 2021, Journal of Archaeological Science: Reports). Second, ethnographic parallels exist: Sardinian nuraghe and Polynesian marae demonstrate that subtractive stone carving at the scale of 100 workers over multiple seasons is achievable within pre-state social organization when the monument is a sacred site rather than a settlement. Neither parallel is exact — the nuraghe are towers, not single carved figures, and the marae are architectural complexes. No direct ethnographic parallel for a single monumental subtractive carving of this scale exists; the yardang hypothesis (Section 1) partially addresses this by reducing the required labor.

Critically, the stone carving skills required for bedrock monumental work were present in the Naqada II–III horizon and are peer-reviewed documented. Stocks (2003, Routledge; updated 2022) documents that the large-scale manufacture of stone vessels during the Naqada II (c. 3600–3200 BCE) and Naqada III/Dynasty 0 (c. 3200–3050 BCE) periods directly produced the tools and skills that later enabled Dynastic hard stone statuary and ceremonial palette carving, including the Narmer Palette, Cairo, Egyptian Museum, CG 14716 (Stocks 2003, Introduction). A major Predynastic stone vessel manufacturing industry is independently documented in northern Lower Egypt, west of Cairo, with quarrying of Haddadin basalt spanning at least 900 years through the Predynastic period (Mallory-Greenough, Greenough and Owen 1999, ‘The stone source of Predynastic basalt vessels’, Journal of Archaeological Science 26(12): 1261–1272). The specific tool kit available to this population for limestone carving is documented across multiple peer-reviewed sources and addresses the recurring reviewer objection that Predynastic stone vessel production does not imply Sphinx-scale subtractive capacity. For limestone — softer than the granite and basalt that Predynastic craftspeople routinely worked — the available toolkit was more than adequate. Flint chisels, the most abundant Predynastic cutting tool, removed limestone with ease and required no sharpening during use; experimental replication by Stocks (2003, pp. 81–95) confirmed this directly, with test results showing no damage to the chisel edge after sustained limestone carving.

Arsenical copper chisels and axes were in continuous production at Maadi from approximately 3600 BCE — making Maadi the earliest documented copper-working site in Egypt (German

Archaeological Institute, Cairo) — with arsenical copper technology documented in unbroken continuity through to Old Kingdom Giza: a 2021 metallurgical analysis of copper tools from the Giza workers' settlement under Khufu and Khafre found that one artefact had isotopic provenance traceable to Predynastic Egyptian metalwork (Odler et al. 2021, Journal of Archaeological Science: Reports). Dolerite pounders — the primary stone-on-stone impact tool for hard rock removal — were in use from the second phase of the Predynastic Period onward (Kelany, Harrell and Brown 2010, Lithic Technology 35(2): 127–148; Gil Sevillano 2025, Lithic Technology). For subtractive carving of a limestone formation, the simplest tools (flint chisel, copper chisel, dolerite pounder) were fully sufficient; the granite-drilling tube technology and abrasive sand techniques documented by Stocks were not even required. The 2022 edition of Stocks (Routledge) includes a new chapter specifically on Predynastic industrial transitions, documenting how the surge in stone vessel and faience production during the Late Predynastic period established the very toolkit and organisational knowledge that monument carving in limestone would require. The population occupying the Giza plateau during the proposed window therefore had access to both the tools and the established stone-removal techniques that subtractive carving of an existing limestone formation would require. The capacity trajectory within the proposed construction window strengthens this argument further. The Koptos colossi — three monumental limestone statues from the Predynastic Min temple at Koptos, dated to approximately 3300 BCE (late Naqada II to early Naqada III, with some scholars favouring a slightly later Early Dynastic placement) — stand approximately 4 metres tall and weigh approximately 2 tonnes each. Excavated by Petrie in 1893–1894 (Petrie, W.M.F. 1896, Koptos, Bernard Quaritch, London; documented in the Ashmolean Museum, Oxford, AN1894.105d), the Ashmolean describes them as 'among the oldest preserved stone sculptures in the world' and 'the beginning of a long tradition in Ancient Egypt of building on a monumental scale.' These additive free-standing statues were achieved within or shortly after the proposed construction window. Subtractive bedrock carving of an existing natural formation requires less organizational infrastructure than additive construction of free-standing 4-metre statues: the capacity precondition for the Sphinx is satisfied by the same cultural horizon that produced the Koptos colossi.

Reader (1997, revised 1999; and 2026, Chapter 12, pp. 206–209) documents a parallel timeline for the development of stone-working technique specifically, independent of the toolkit evidence above: stone architectural elements appear in First and Second Dynasty tombs at Helwan, large-scale stone construction is attested at the Gisr el-Mudir at Saqqara (provisionally dated to the mid-to-late Second Dynasty), and the Palermo Stone itself attributes construction in stone to the Second Dynasty's last pharaoh, Khasekhemwy. This independently-documented skill-progression timeline adds further comparanda to the capacity case established above.

A transparency note is necessary at this point, including a clarification of what the series architecture requires a reviewer to assess. Mainstream Egyptology, including Wilkinson (1999, Early Dynastic Egypt, Routledge) and Kemp (2006, Ancient Egypt: Anatomy of a Civilization, Routledge), treats the Shemsu Hor as a mythological or semi-historical textual tradition rather than as an archaeologically identified population. Paper III of this series addresses that position directly and at length: its own evidentiary case rests on four primary lines of evidence — textual tradition, the archaeological package, astronomical orientations, and structural chronological convergence — building on two further lines, the genetic endpoints and the highland-corridor paleohydrology, already established in Papers I–II, for six independent lines across the series as a whole. The five Saharan pastoral markers that co-occur at the HK6 elite cemetery at Hierakonpolis — dung fuel use, Balanites aegyptiaca offerings, livestock horn modification, the bat cow goddess emblem, and skeletal morphological diversity — appear together at the right site, in the right window, at the predicted concentration, and include one line — the cranial

variability documented among 45 Predynastic Hierakonpolis crania (Zakrzewski and Powell 2011) — which speaks to the population itself rather than to traded goods. The Canopus orientation family across some 330 surveyed temples, the distinctive cosmogony of the Edfu Building Texts, and three independent chronological convergences on the 3800–3100 BCE window complete the consilience case. Paper III's decisive tests — isotopic and aDNA analysis of HK6 elite contexts, and geochemical sourcing of Naqada II hard-stone vessels against the Richat carbonatite signature — target existing museum collections and remain the outstanding confirmation step. This supplementary paper assumes that evidentiary case and does not re-argue it. A reviewer assessing whether the Shemsu Hor were a real, corridor-documented, archaeologically grounded population should consult Paper III (Levy 2026, DOI: 10.5281/zenodo.21381860). A direct archaeological attribution at Giza specifically — diagnostic pottery, burial practices, or iconographic markers on the plateau itself — has not been identified, for two compounding reasons that are not incidental: the Giza plateau was a corridor waypoint, not a settlement site, and Fourth Dynasty construction physically destroyed the Predynastic stratigraphy at the plateau (Kromer 1978; Oxford Handbook of Giza, 2018). The Shemsu Hor identification for the Sphinx is a hypothesis, not a demonstrated attribution; the population's reality and corridor documentation is the established work of Paper III.

5. The Zep Tepi Framework as a Predictive Lens

The Zep Tepi Series (Papers I–III and Phase Zero, Levy 2026) was not developed to explain the Sphinx. It was developed to document a Saharan corridor migration and its integration into Predynastic Egypt. Its framework therefore makes predictions about what a monument built in the second phase of the 3800–3100 BCE Shemsu Hor horizon — c. 3400–3300 BCE, as the expanding population reached and settled the Giza region — would look like, where it would be located, and what characteristics it would carry — independently of any Sphinx-specific argument. This section states those predictions explicitly and then evaluates the Sphinx against them. The logic is deductive: does the Sphinx satisfy the framework's own internal predictions? It does so on seven independent criteria.

Prediction 1: Construction Method Consistent with Pre-State Capacity

Phase Zero (Levy 2026) establishes the Capacity Gap: the interval between the Shemsu Hor period (3800–3100 BCE; construction estimate c. 3400–3300 BCE) and Imhotep's Step Pyramid complex (c. 2670 BCE) — described in Phase Zero as "the first durable expression in monumental stone architecture" — was not a knowledge gap but a state capacity gap. A population at the pre-state organizational level could not mobilize the labour required for additive stone construction at architectural scale. The framework therefore predicts that any monument built by the Shemsu Hor population would be subtractive, not additive: carved from existing material rather than built from transported stone.

The Sphinx satisfies this prediction exactly. It is not built; it is carved. The entire monument was removed from the existing Giza plateau limestone. No stone was transported, dressed, and positioned at architectural scale. The primary basis for this prediction is the direct capacity evidence documented elsewhere in this paper: the Maadi culture's copper assemblage, subject to the provenance qualification noted above, the stone-removal techniques attested for the period (noting that the dolerite pounders documented by Kelany, Harrell and Brown 2010 belong to Aswan granite quarrying and are not independently attested at Giza within the proposed window), and the Koptos colossi. Two clarifications are required here. The colossi are cited for capability class rather than for scale: Reader reads them as carved from probable field stones (2026, p. 189) and treats them as evidence of limited rather than sufficient capacity, and that

reading is not disputed here. More importantly, Reader's objection is that the stone-working technology of the Nile Valley was not sufficiently advanced at that date — in his own formulation, by any culture — and it is an argument from the attested Nile Valley developmental sequence. The corridor hypothesis does not answer that by asserting a Nile Valley sequence which is not there. It answers that the relevant developmental sequence would be Saharan rather than Nilotic, and would therefore not be expected to appear in the Egyptian record at all. Monumental stone-working is attested in the Sahara before it appears in Egypt: the Nabta Playa megaliths, quarried, transported and set (Malville et al. 1998), belong to the corridor and predate the Egyptian sequence. That establishes a tradition of working stone at monumental scale within the proposed source region. It does not establish equivalence of technique: setting shaped megaliths is not the controlled excavation of bedrock to a plan that Reader identifies as the prerequisite (2026, p. 208), and no Saharan parallel for a subtractive carving on the scale of the Sphinx is known. The prediction therefore stands as a claim about where the capability would have originated, and remains open to the objection that the specific technique is unattested in either region before the Early Dynastic. The workforce comparison provides a supporting quantitative check on the same conclusion: experimental work places Sphinx carving at approximately 100 workers over three years (Lehner 1997, The Complete Pyramids) — well within the organizational capacity indicated by the toolkit and craft evidence — against the Great Pyramid's approximately 10,000 workers at peak, requiring over two decades under conventional estimates, and 44–69 years under the Phase Zero construction constraint analysis (Levy 2026; Lehner 2002, JARCE 39: 27–74), with full state logistics infrastructure. The ratio corroborates, rather than establishes on its own, what the toolkit and craft-industry evidence already indicates: the Sphinx is what the Capacity Gap predicts, a monument at the scale of what is achievable without a state.

Prediction 2: Location Between the Two Documented Integration Nodes

The Zep Tepi Series establishes two primary Shemsu Hor integration sites. Paper III (Levy 2026) documents HK6 at Hierakonpolis as the Upper Egyptian node — the site of the elite Predynastic cemetery with five Saharan pastoral markers appearing together in the right window. The same paper documents Sethe's standard Egyptological identification of the Shemsu Hor as "the prehistoric kings of Hierakonpolis and Buto" — establishing Buto/Pe in the western Delta as the Lower Egyptian node. The framework therefore predicts that any significant Shemsu Hor sacred site would be located in the geographic corridor between these two nodes: the Upper Egyptian/Lower Egyptian axis.

The Giza plateau satisfies this prediction, though the geographic argument requires precision. Geographic midpoint alone carries limited weight: many sites lie between Hierakonpolis and Buto, including Memphis, Abydos, and the entirety of Middle Egypt. The argument rests not on midpoint position as such but on three more specific features. First, the plateau is the northernmost prominent limestone escarpment on the west bank before the Nile Valley opens into the Delta — a geological bottleneck, not merely a midpoint. Second, the Giza plateau rises approximately 60 metres above the surrounding Nile floodplain (Giza Plateau geology, Mokattam Formation), making it the most visually dominant elevated feature in the entire corridor between the two nodes — the formation that would be encountered and recognised by any population moving northward through the valley. Third, the plateau provided the only significant outcrop of workable nummulitic limestone at a commanding elevation in this section of the corridor — the combination of prominence, accessibility, and carving material that a population with subtractive construction capacity would require. Among currently documented locations in the corridor, no other formation combines all three properties simultaneously: commanding elevation, carving-grade nummulitic limestone, and direct fluvial access from the

active Nile branch documented by Sheisha et al. (2022). This reflects the absence of any comparably documented alternative in the existing geological and archaeological literature, not an exhaustive corridor-wide survey eliminating every competing site — such a survey would be required to establish uniqueness with certainty. A direct comparison with the two nearest candidate sites supports this conclusion rather than merely asserting it. Abu Rawash, approximately 8 km north-northwest of Giza and the site of a documented archaic cemetery (Hawass 1980, MDAIK 36: 229–244), is geographically the closest comparator and in fact lies slightly further north; however, it sits on Turonian (Late Cretaceous) formations — chalky, flint- and rudist-bearing limestone interbedded with marl (Raynaud, de la Boisse, Makroum and Bertho 2010, 'Geological and topographical study of the original hills at the base of Fourth Dynasty Egyptian monuments of the Memphite plateau', Bulletin de la Société Géologique de France 181(3): 279–290) — geologically older than the Mokattam Formation and lacking the same combination of durability and carving characteristics that nummulitic limestone offers for monumental work. Saqqara, the other major candidate, sits on the Maadi Formation's Saqqara Member: argillaceous limestone, marls, and claystones with significant gypsum content, documented in the conservation literature as comparatively weak and weathering-prone (Akarish 2011, Australian Journal of Basic and Applied Sciences), and its plateau rises only approximately 17 metres above the Nile floodplain — roughly a quarter of Giza's elevation. Neither site combines Giza's elevation, its harder carving-grade limestone, and its documented Nile access. For Middle Egypt more broadly, no comparably elevated nummulitic-limestone formation directly on the Nile floodplain has been documented in the available geological literature; this reflects the current state of survey coverage rather than an exhaustive search undertaken specifically for this paper. Giza is not merely 'between' the two nodes; among currently known formations, it is the strongest candidate satisfying all three conditions a subtractive-capacity population would require to produce a bedrock monument of this scale.

Prediction 3: Orientation Consistent with the Wedjat Framework

Paper II (Levy 2026) documents the Wedjat framework as a system of threshold quantization, with the 1/4 fraction corresponding to a 90° rotation — the equinoctial azimuth. The Belmonte, Shaltout and Fekri (2008) survey of some 330 Egyptian temple orientations, cited in Paper III, documents a statistically significant equinoctial orientation family in Egyptian sacred architecture. The framework therefore predicts that a monument expressing the Shemsu Hor cosmological tradition would be oriented toward the equinoctial family — the 90° azimuth corresponding to the Wedjat 1/4 fraction. The 1/4 quantum is not an arbitrary division within Egypt's own ritual vocabulary. The Pyramid Texts of Unas use the formula of the Eye of Horus specifically for the restoration of sight: 'I give to him his eyes, that he may be satisfied' (Pyr. Utt. 14); 'Geb has given to thee thine eyes, that thou mayest be satisfied… eye of Horus' (Pyr. Utt. 15); and the solar and lunar eyes are invoked together as a restorative pair at Utterance 43 ('Take the two Eyes of Horus, the black and the white one… that they may brighten your face') (Faulkner, R.O. 1969, The Ancient Egyptian Pyramid Texts, Oxford University Press). A monument whose entire form is a directed gaze — a face carved to look toward one fixed point on the horizon — faces the same fraction of the Wedjat system that Egypt's own oldest religious texts tie to the restoration of sight. This is offered as a thematic convergence consistent with the orientation framework of Paper II, not as independent proof of any specific fraction-to-sense correspondence, which remains an inference beyond what any single Old Kingdom text states explicitly.

The Sphinx faces approximately 90° east — the spring equinox sunrise. This is the canonical equinoctial azimuth: the moment of equal day and night, the threshold point of the year. The Egyptian Ministry of Antiquities has confirmed the Sphinx's equinox alignment photographically

(spring equinox, March 20, official publication). Nell and Ruggles (2014, Journal for the History of Astronomy 45(3): 304–360, DOI: 10.1177/0021828614533065; e-preprint arXiv:1302.5622), whose precision Total Station survey of the Giza plateau measured the east–west orientations of associated structures, report that for the pyramids of Khufu and Khafre 'the east-west axis is closer to true cardinality in both cases', and that across the associated structures 'the east-west orientation in relation to sunrise or (in one case) sunset may have been a, or even the, key factor in many cases' and that east–west orientation "may have been a, or even the, key factor in many cases". The same authors also state that 'no records have been recovered to indicate that the ancient Egyptians were cognizant of equinoxes or that they held any importance for them', that high western horizons 'seem to rule out the use of this method on the Giza plateau', and that where survey postholes survive 'the evidence suggests that the primary baseline was oriented north-south'. Their findings therefore cut both ways, and the question of equinoctial primacy at Giza is unresolved on their evidence. The Sphinx is the only structure on the plateau whose primary face direction is due east. The Sphinx's orientation satisfies the Wedjat 1/4 framework prediction. Astronomically determined orientation is independently attested at Node 7 itself in the Predynastic period. Belmonte, Shaltout and Fekri (2008) identify structure HK29A at Kom el Ahmar (ancient Hierakonpolis or Nekhen) as 'the earliest Egyptian temple we know' and 'the first building in Egypt to be orientated with respect to the simultaneous near-meridian transit of Phecda and Megrez' — two stars of the Meskhetyu — with the temple axis obtained by rotating the astronomically determined north–south line through 45° (2008, pp. 190–191 and Table 1, where HK29A and HK29B are listed as pre-dynastic with measured azimuths). Their Figure 11(a) reconstructs the Kom el Ahmar sky at c. 3100 BCE with Thuban at the pole. The same authors note that the Meskhetyu was fully circumpolar at Umm el Qab in the Abydos desert c. 3000 BCE, and root the whole tradition in 'the prehistoric alignments of Nabta Playa, where solar and stellar orientations were perhaps already in operation in the Neolithic period' (2008, p. 192 and n. 42). The equinoctial orientation was not invented at Giza. The same population's corridor archaeology documents it at an earlier node: Nabta Playa (node 6, southern Egypt), dated to approximately 5,000 BCE, contains a calendar circle with two internal sightlines, reported by its excavators as aligned to cardinal and solstitial directions — one toward summer solstice sunrise and one toward north (Malville, J.M., Wendorf, F., Mazar, A.A. and Schild, R. 1998, 'Megaliths and Neolithic Astronomy in Southern Egypt,' Nature 392(6675): 488–491, doi 10.1038/33131; Malville et al. 2008, 'Astronomy of Nabta Playa,' in African Cultural Astronomy, pp. 131–143). The Sphinx's due-east orientation is the Giza expression of an astronomical tradition documented in stone 700km to the south, at the same corridor population's previous stop.

Prediction 4: Absence of Institutional Maintenance Records — Anomalous for Fourth Dynasty, Expected for Predynastic

A monument built by a pastoral population without state apparatus would have no institutional priesthood, no administrative records, and no formal maintenance structure. When that population was absorbed into the consolidating Dynastic state, the monument's custodians ceased to exist as an independent social formation. The framework predicts that such a monument would arrive in the historical record as an already-ancient sacred object with no founding attribution — because no institutional memory bridge survived the transition.

This prediction discriminates between the models: the Fourth Dynasty context has documented institutional apparatus for every other Giza monument, so the Sphinx's absence of it is anomalous only for the Fourth Dynasty model, not for a Predynastic one. The Sphinx satisfies the prediction. No construction inscription exists. No priesthood titles appear in any Old Kingdom tomb at Giza — anomalous within the same necropolis where Khufu's priests held

documented titles in mastaba inscriptions. The Sphinx cult was absent through the Old Kingdom and only activated more than a millennium later in the New Kingdom 18th Dynasty (ARCE Sphinx Mapping Project 2023). This pattern is consistent with what the framework predicts for an inherited monument whose original custodians had no institutional successors. Two mainstream alternatives deserve engagement here, since this observation discriminates without doing so decisively. The first is record survival bias: only a fraction of Old Kingdom administrative documentation survives, and absence of evidence is not evidence of absence. The second, raised in mainstream discussions including by Mark Lehner, is that the Sphinx may never have held a separate institutional identity, having been treated as a subordinate feature of Khafre's complex rather than an independent cult focus requiring its own priesthood and records. Both are comparably strong to the explanation offered here on this point alone. What favours Predynastic inheritance is not that these alternatives are refuted, but that it accounts for this silence together with the differential weathering, the disproportionate head, and the non-cardinal causeway routing, within one coherent model — where survival-bias and subordinate-feature explanations are silent on the other anomalies. The silence is offered as cumulatively persuasive, not independently decisive.

Prediction 5: Pre-Writing Period — Contextual Explanatory Principle

The Shemsu Hor window (3800–3100 BCE) is almost entirely pre-literate. The earliest attested Egyptian writing appears on the ivory, bone and stone labels from Tomb U-j at Abydos, dated to Naqada IIIA, c. 3150 BCE (Dreyer 1998; the assemblage and its 192 labels are described in the review by Williams 2003, Journal of Near Eastern Studies 62(2): 142–147), so only the final decades of the corridor sequence fall within the written record. The construction estimate of c. 3400–3300 BCE places the monument roughly two centuries before that first attestation. This observation is acknowledged as explanatory rather than uniquely discriminatory: it would apply to any Predynastic monument. Its analytical role is to account for one component of the documentary silence without requiring special explanation. The discriminatory weight rests on Prediction 4 (absence of institutional records within a fully documented Fourth Dynasty context). The Sphinx's complete absence from Predynastic texts is simply the expected condition for anything built before writing. The anomaly, as established in Section 1, is the continued silence through the Old Kingdom, when exhaustive administrative record-keeping was standard. The framework accounts for both: the initial silence is explained by the pre-writing period; the continued silence is explained by Prediction 4 (no institutional custodians to create administrative records).

Prediction 6: Iconographic Consistency with the Corridor Tradition

The Zep Tepi Series documents a lion-bull duality across the corridor tradition: lion burials in the HK6 elite cemetery at Hierakonpolis (Paper III), bull iconography from Nabta Playa through the Saharan rock art tradition (Papers I–II), and the bull cult documented at the Predynastic ceremonial complex (Phase Zero). Paper III documents that Horus — the falcon deity whose cult the Shemsu Hor carried — appears in later religious traditions in a lion-headed form specifically at Buto, the Lower Egyptian Shemsu Hor capital. That the physical evidence for this lion-headed form is Late Period does not establish a Late Period concept; the full archaizing argument is developed in Section 5.

Prediction 7: The "First Attempt" Threshold — Proto-Monument Before the Pyramid Tradition

Phase Zero establishes Imhotep's Step Pyramid (c. 2670 BCE) as "the first durable expression in monumental stone architecture" in the Zep Tepi framework. This framing implicitly predicts a gap before Imhotep — a period when the monumental impulse existed but the additive stone capacity did not. The Sphinx, if Predynastic, fills this gap: it is an expression of monumental intention at the scale of pre-state capacity. A caution against overstatement is warranted here. Archaeology generally treats early technological development as multiple parallel experiments rather than a single linear progression, and this paper's own evidence supports that view: the Koptos colossi demonstrate that monumental additive stone sculpture was being attempted in roughly the same period by the same cultural horizon. The Sphinx is therefore better understood as one early experiment in monumental intention among several documented in the late Predynastic record, not the singular first step of an inevitable ladder toward the Step Pyramid and the Pyramid Age. What distinguishes it is not chronological priority in an evolutionary sequence but a different, subtractive solution to the same underlying problem of monumental expression that the additive Koptos tradition was solving in parallel. On this reading, it remains the earliest known attempt at subtractive monumental sculpture at this scale, preceding by roughly seven centuries the additive mastery expressed in the Step Pyramid and by 1,000+ years the full flowering of the Pyramid Age — without implying that it was the sole or necessary precursor to either.

The Sphinx's abandoned temple — documented by AERA as abandoned mid-program, with construction debris never cleared from the temple interior — is consistent with precisely this interpretation. The subtractive phase (carving the figure from bedrock) was achievable; the additive phase (dressing enclosure blocks, constructing the temple) was not completed. One interpretation is that the builders reached the limit of what their pre-state organizational structure could sustain — a capacity ceiling rather than a deliberate stopping point. Other explanations remain available and cannot currently be excluded: a change in design partway through construction, political interruption or a change of patronage before completion, or a shift in construction priorities elsewhere in the corridor. None of these alternatives is independently evidenced any more than the capacity explanation is; this paper's reading is preferred because it follows directly from the organizational-capacity argument already established for the subtractive phase, without requiring an additional unevidenced event for which no independent trace survives. The monument was abandoned at the threshold where pre-state capacity ends and state capacity begins, on this hypothesis. That threshold — documented by Phase Zero as the 600-year gap — is where the physical evidence of the Sphinx Temple's construction history ends.

Summary: Predictions by Discriminatory Tier

Not all predictions carry equal discriminatory weight. Four are primary discriminating predictions — anomalous under the Fourth Dynasty model, expected under the Predynastic model: (1) no institutional maintenance record within a fully documented necropolis; (2) construction abandoned at the pre-state capacity threshold; (3) geographic location at the midpoint between the two documented integration nodes; (4) non-uniform weathering with western bias consistent with pre-Khufu runoff catchment (Reader 2001a) — a distribution haloclasty cannot explain. Three are secondary contextual predictions — consistent with the framework, not uniquely discriminating: (5) equinoctial orientation consistent with the corridor's documented astronomical tradition; (6) lion-guardian iconographic consistency with the corridor therianthropic tradition; (7) subtractive construction where the key argument is the capacity differential (100 workers vs

10,000 for the pyramid). One acknowledged explanatory principle: the pre-writing period explains initial documentary silence; the anomaly is the continued Old Kingdom silence, addressed by Prediction 4. Each prediction was derived from Papers I–III and Phase Zero independently of the Sphinx. The convergence of four strongly discriminating and three contextual predictions on one monument does not prove the hypothesis. It demonstrates that the Predynastic Sphinx framework is actively predicted by the series' own prior work. The table below organises the seven predictions by discriminatory weight. 'Discriminatory' means the prediction is anomalous under the Fourth Dynasty model but expected under the Predynastic model. 'Contextual' means the prediction is consistent with the framework but not uniquely anomalous under the conventional attribution. The three contextual predictions strengthen the convergence picture; the four primary predictions carry the inferential weight. A precision is required here. Predictions 2, 3, and 6 share a common antecedent: Paper III's identification of the Shemsu Hor corridor population. If that identification is incorrect, all three predictions fail together — they do not constitute three separate tests of whether a corridor population existed at all. What they do constitute, granting Paper III's framework, are three separate tests of whether Giza's specific properties match what that framework would predict. A corridor population passing through the Giza region does not, by logical necessity, entail that any monument built there would face the equinoctial sunrise, or that its form would be a lion rather than a falcon, bull, or other corridor-attested form. Each is an independent fact about the monument that the framework predicts but does not entail from the corridor population's existence alone. The dependency is real at the level of the framework's overall validity; it is not present at the level of Giza's specific, separately falsifiable properties once the framework is granted. A further refinement is worth noting, though it does not change the prediction set itself: among the four primary discriminating predictions, weathering and institutional silence bear most directly on chronology — they discriminate when the monument was carved — while geographic location bears more directly on attribution — discriminating who carved it, granting a Predynastic date. Both forms of discrimination are needed for the overall argument; a reader assessing the strength of any single prediction should bear in mind which question it is actually answering.

6. The Logistical Argument Against Fourth Dynasty Construction

If the Sphinx was built simultaneously with Khufu's pyramid, the administrative and workforce requirements are difficult to reconcile with the documented record of that construction effort. The Great Pyramid required approximately 10,000 workers at peak — the figure grounded in physical evidence from the Heit el-Ghurab workers' settlement (Lehner 2002, JARCE 39: 27–74; Lehner and Conard 2001, JARCE 38: 21–60), as documented in Phase Zero (Levy 2026) — requiring over two decades under conventional estimates — and substantially longer under the construction-constraint analysis of Phase Zero (Levy 2026), which documents 44–69 years across the full program. The Wadi el-Jarf papyri, particularly the Diary of Merer, document this logistics apparatus in daily granular detail: limestone transport by boat, copper tool deliveries, rations, gang assignments. The papyri represent the most complete record of any ancient construction project. The Diary of Merer covers only a fraction of Khufu's reign, so its absence from those specific papyri is not on its own decisive — the diary's fragmentary survival makes this statistically expected. A further dimension of the logistical picture has been added by Lehner himself: in his 2020 study 'Merer and the Sphinx' (in Kamrin et al. (eds.), Guardian of Ancient Egypt: Studies in Honor of Zahi Hawass, vol. II, Charles University, Prague, pp. 895–925), Lehner argues that the broad bedrock terrace on which the Khafre Valley Temple and Sphinx Temple were built served as a landing stage and logistics depot for the delivery of Tura limestone during Khufu's pyramid construction — the very operation documented in the Diary of

Merer. If the Sphinx terrace was already functioning as Khufu's logistics hub, the Sphinx was a pre-existing landmark during Khufu's reign, not a structure under simultaneous construction. What is more significant is the broader administrative pattern: the system capable of producing Merer's granular daily documentation left no record of Sphinx construction in any surviving Fourth Dynasty source — not in the Wadi el-Jarf papyri, not in any mastaba inscription, and not in any monument dedication text from the entire Giza building program.

The conventional model places Sphinx construction under Khafre, not Khufu. But Khafre's reign was itself fully committed to pyramid construction, the Valley Temple, the mortuary temple, the causeway, and the associated complex. AERA's stratigraphic analysis documents that the Sphinx Temple — the final construction element associated with the Sphinx — was abandoned before completion, with its builders apparently departing mid-task: partially quarried bedrock and construction debris never cleared from the temple interior (AERA, aeraweb.org/khafres-monuments/, "Khafre's Monuments as a Unit"; Hawass and Lehner observations, as documented by AERA, aeraweb.org/khafres-monuments/, "Khafre's Monuments as a Unit"). The mid-task abandonment of a 100-worker carving project is difficult to reconcile with the administrative capacity demonstrated elsewhere in Khafre's reign, including the completion of the second-largest pyramid at Giza. Under the predynastic model, this abandonment is expected as the signature of a secondary program deprioritized when primary pyramid construction demanded full resources. The abandonment pattern is more consistent with the Sphinx being an inherited structure that a Fourth Dynasty program attempted to complete and then deprioritised, rather than a monument initiated and then voluntarily left unfinished by its own builder. AERA documents that the Sphinx Temple was never put into use: construction debris was never cleared from the interior, and the complex exhibits the physical characteristics of a program that stopped before completion (AERA, aeraweb.org/khafres-monuments/, "Khafre's Monuments as a Unit").

7. The Climate Transition Window: Episodic Erosion and the 3800–3100 BCE Environment

A distinction should be restated before the climate evidence is assessed. The 3800–3100 BCE range is the corridor integration sequence — arrival in Upper Egypt from c. 3800, northward spread reaching Giza by c. 3500, demographic majority in Lower Egypt c. 3300–3100 — and the construction is placed in the second phase, c. 3400–3300 BCE, with the monument standing exposed and unmaintained through the third. The climate discussion below therefore concerns the whole interval, since the erosion history begins at construction and continues to Khufu, while the construction estimate itself is the narrower c. 3400–3300 BCE. The 3800–3100 BCE range does not fall within stable aridity. It falls within the terminal phase of the African Humid Period — characterized not by steady rainfall but by high-variance, episodic climate behaviour. The load-bearing evidence is now Giza-specific. Sheisha et al. (2022, 'Nile waterscapes facilitated the construction of the Giza pyramids,' PNAS 119(37): e2202530119, DOI: 10.1073/pnas.2202530119) provide an 8,000-year fluvial reconstruction of the Giza Nile reach, demonstrating that the Giza branch was active throughout the proposed window and that the Giza plateau was a site of active Predynastic human presence throughout the fourth millennium BCE — not an empty desert plateau. This is the centrepiece of the climate section: the Giza-specific data confirms that the population, the carving capacity, and the climate window all coincide on the plateau. The 2024 extension by Younes, Marriner, Kaniewski, Sheisha and colleagues ('The pyramid builders' waterways: Reconstructing the ancient topography of Khufu's Pharaonic Harbour at Giza,' Journal of Archaeological Science: Reports 53: 104303) Journal of Archaeological Science: Reports 53: 104303, DOI: 10.1016/j.jasrep.2023.104303)

provides additional Giza-specific hydrological data. Two of their findings bear directly on the erosion argument. Their core Giza-3 records a secondary palaeo-channel of the Nile functioning ‘from the early Middle Holocene until about 3100 BC’, deposited under conditions they interpret as ‘a high-energy environment’, with the further note that ‘wash-out sediments from wadis surrounding the Giza pyramids plateau would have contributed to sediment supply’. And in reconstructing the Giza region ‘during the middle Holocene period, before the pyramids were constructed’, they map Wadi Menkaure as a feature ‘which transfers flashflood waters resulting from short and intense rainfall events from the plateau to the floodplain’. This is Giza-plateau flashflood drainage from short, intense rainfall, documented for the pre-pyramid period, and it is the mechanism this paper’s erosion argument requires. The same study documents the Khufu pharaonic harbour and its waterway infrastructure — the same branch the Sphinx body would have overlooked — was functional throughout the proposed construction window. The broader AHP termination is dated to approximately 5800–4800 BP (3800–2800 BCE) with time-transgressive regional variation (Collins et al. 2017, Nature Communications 8(1): 1372; Pennington et al. 2019; Trauth, Asrat, Fischer et al. 2024, ‘Early warning signals of the termination of the African Humid Period(s),’ Nature Communications 15(1): 3697, DOI: 10.1038/s41467-024-47921-1). As monsoon systems weakened, the atmospheric vacuum was filled by unstable Mediterranean depression systems capable of producing short-duration torrential precipitation. A landscape that had lost its vegetative buffering was maximally vulnerable to runoff erosion during such events. Trauth et al. (2024) provide direct empirical confirmation of this episodic structure: analysing 620,000 years of lake sediment cores from Chew Bahir in southern Ethiopia, they document that the AHP termination was not a linear drying trend but a pronounced ‘flickering’. In the lead author’s own words, ‘at the end of the AHP, we observed at least 14 dry events in the short cores from Chew Bahir, each of which lasted 20-80 years and recurred at intervals of 160±40 years’. Of particular relevance to the erosion mechanism proposed here, the same study reports that later in the transitional phase, from about 6,000 BC, seven wet events occurred alongside the dry ones, ‘of a similar duration and frequency’ — that is, episodes of extreme wetness lasting decades and recurring at roughly 160-year intervals, within an overall drying trend. The transition itself is dated to approximately 5.5 kyr BP and occupied roughly one thousand years. At least 14 discrete dry events each lasting 20–80 years, recurring at intervals of 160±40 years, over approximately 1,000 years before permanent aridification. This is the episodic high-variance climate signature the paper’s erosion model requires: not sustained rainfall, but intense short-duration precipitation events on a desiccating landscape, producing the compound non-linear erosion documented in the enclosure walls.

Three peer-reviewed studies now provide the paleoclimate record the climate argument requires, the primary two at Giza-local resolution and one providing regional corroboration. The primary Giza-local record is Butzer, Butzer and Love (2013, ‘Urban geoarchaeology and environmental history at the Lost City of the Pyramids, Giza,’ Journal of Archaeological Science 40(10): 3340–3366), which conducted direct stratigraphic coring on the Giza floodplain itself — immediately east of the Pyramid plateau. Their sequence documents a “destructive period of extreme precipitation” at Giza that the authors describe as “novel for the Holocene record of the NE Sahara,” requiring a synoptic mid-latitude jet-stream explanation rather than monsoonal circulation. This is not a proxy from a distant site: it is Giza floodplain sediment stratigraphy confirming that high-energy episodic precipitation events — capable of generating surface runoff into the Sphinx enclosure — are recorded in the on-site geological sequence. Butzer, Butzer and Love date that anomaly to the construction of the Menkaure pyramid, c. 2532–2503 BCE, and they conclude that flooding and high-energy run-off were not a significant hazard during the earlier phases of pyramid building at Giza. The paper therefore cites them for the mechanism — that Giza experienced high-amplitude precipitation anomalies producing destructive run-off —

and not as a dated proxy for the 3800–3100 BCE window. Reader (2020) independently places rainfall run-off as an erosive agent experienced at Giza 'until the late Fifth Dynasty', which establishes the regime across a long interval without fixing its beginning. The second Giza-adjacent source is Sheisha et al. (2022, PNAS 119(37)), whose pollen-derived 8,000-year fluvial reconstruction of the Khufu branch documents high Nile levels throughout both the corridor window and the construction estimate within it. The third source provides regional corroboration: a radiocarbon-dated 370cm sediment core from Lake Hamra at Wadi El Natrun (Western Nile Delta, approximately 90km northwest of Giza) documents that "the Mid-Late Holocene between the Predynastic to Old Kingdom was terrestrial wetland habitat with high seasonal rainfall and/or Nile flood" and that "during the early stage of Late Holocene coincident with the Old Kingdom to Middle Kingdom, the paleoclimate became more arid with low seasonal precipitation" (Zaky et al. 2020, Quaternary International 542: 109–120). Lake Hamra is not the closest available proxy — Butzer et al.'s Giza floodplain stratigraphy is on-site — but it provides regional confirmation that the same Predynastic-to-Old-Kingdom rainfall transition is documented across the northern Egyptian lowland zone. The Lake Hamra core reaches back to approximately 5290 cal BP (approximately 3340 BCE), so it directly overlaps only the terminal phase of the proposed window (approximately 3340–3100 BCE); for that closing interval its basal wetland zone records high seasonal rainfall and/or Nile flood, consistent with the paper's episodic-runoff model. The integration sequence (3800–3100 BCE) falls on the high-rainfall side of this documented transition in the Giza-local and delta-scale records (Butzer et al. 2013; Bernhardt et al. 2012), while the Lake Hamra core corroborates the window's closing phase; in every case the Old Kingdom aridification begins after the proposed window closes. A fourth corroborating source: Bernhardt, Horton and Stanley (2012, 'Nile Delta vegetation response to Holocene climate variability,' Geology 40(7), 615–618, DOI: 10.1130/G33012.1 — USGS / Geological Society of America) document four aridity events in the Nile Delta pollen record at approximately 6000–5500, 5000, 4200, and 3000 calibrated years BP. The nature of this proxy should be stated precisely: Cyperaceae pollen is presented by the authors as 'a sensitive marker of precipitation over the Nile headwaters and the resultant Nile flow', so the record tracks Ethiopian Plateau rainfall transmitted through Nile discharge rather than local rainfall over the Delta or Giza. It therefore corroborates the regional climate sequence but is not evidence of local runoff. Two further points from the same paper are directly relevant. The authors place the African Humid Period at 'ca. 8000 to ca. 5500 cal. yr B.P.' and note that as it progressed, 'precipitation over the Nile headwaters is thought to be variable with extreme rainy seasons'. And they associate the weakening of the monsoons at ca. 5500–5000 cal. yr B.P. with 'the desiccation of rainwater-fed playas in Egypt' and 'the unification of Upper and Lower Egypt' — an explicit link, in a Geology paper, between the terminal African Humid Period and the political consolidation of Egypt. The drought at ~5000 BP (~3000 BCE) corresponds to the unification of Egypt and marks the AHP terminal transition at the END of the proposed construction window. The drought at ~4200 BP (~2200 BCE) corresponds to Old Kingdom collapse. Between the 5000 BP and 4200 BP events — the early Old Kingdom, beginning approximately 2700 BCE — conditions were relatively wetter before the final collapse. This pattern is consistent with the proposed sequence: high-variance episodic rainfall during 3800–3100 BCE driving the enclosure wall erosion, followed by increasing aridification as the monument was buried in sand.

Sheet Floods Documented at Giza

High-energy episodic rainfall is not hypothetical for Giza. Peer-reviewed geoarchaeological work documents it directly:

"Climate change in Egypt in the 3rd millennium BCE has been expressed not only by aridification and low floods of the Nile but also by heavy rainfall periods. Gradual aridification

starting around 5000–4500 cal BP was accompanied by simultaneous intensive rainfalls that resulted in widespread sheet-flood accumulations, attested by archaeological evidence in northern Egypt. " The Menkaure observation is reported separately, and is quoted here in full because the omitted words carry the date: "The American mission, working to the south of the Fourth Dynasty Menkaure pyramid complex at Giza found a thick, mainly sandy series, deposited by sheet floods caused by intensive rainfalls that resulted in destruction of many ancient structures exposed in the examined area (Butzer, 2001)."

(Welc & Marks 2014, Quaternary International; Butzer 2013, Journal of Archaeological Science)

If sheet-flood events powerful enough to destroy built structures at Giza are documented for the 3rd millennium BCE, comparable or greater events during the earlier and climatically more dynamic 3800–3100 BCE window — when vegetative cover was lower and climate variance was higher — are consistent with the physical record. AERA's own ongoing research supports the hydrological relevance of the Sphinx area: Sperber, Goodman, Lehner and Dash (2024, 'Where the Water Disappears: A Ground-Penetrating Radar Survey near the Great Sphinx of Giza,' AERAGRAM 25(1–2): 19–23) document subsurface water movement in the Sphinx enclosure area, providing establishment-level evidence that hydrological processes in the Sphinx area are active and documentable by modern geophysical methods.

Two Independent Lines Establishing Pre-Repair Erosion and Comparative Age

Two independent findings, one from the establishment researcher and one from a comparative tomb analysis, establish that the erosion signature is inconsistent with a Fourth Dynasty origin.

First: Mark Lehner himself, in the first peer-reviewed mapping survey of the Sphinx (ARCE Newsletter 112, 1980), documented a critical anomaly: "The core-body of the Sphinx was already severely eroded when the earliest level of large-block masonry was added to it." (Lehner 1980, NARCE 112: 3–33; the report is credited to Lehner alone in his own bibliography, James P. Allen having been the ARCE Sphinx Project's Project Director rather than a co-author). This is the primary establishment researcher documenting that the Sphinx was severely eroded before any of the known restoration blocks were applied. Since even the earliest blocks are assumed to be New Kingdom repairs (~1400 BCE) under the conventional model, this places significant erosion before 1400 BCE regardless of the original construction date.

Second: Campbell's Tomb, a 26th Dynasty shaft tomb (~600 BCE) cut into the same limestone 30 metres west of the Sphinx enclosure, shows what Vandecruys (2006, PalArch 1(1)) describes as "incipient horizontal recessions and vertical fissuring" — demonstrably less erosion than the Sphinx enclosure walls. If both eroded by the same mechanism from the same rock type, and Campbell's Tomb was cut approximately 1900 years after the Fourth Dynasty, the enclosure walls should be roughly proportionally less eroded — not dramatically more. Reader's geomorphological analysis leads to the same conclusion: surface runoff acting from some time before Khufu's construction is the most consistent explanation for the condition of the western and southern enclosure walls (Reader 2001a, Archaeometry 43(1): 149–165 — challenged in the same volume by Shortland and Doherty (2001, Archaeometry 43(1): 160–162) and defended in Reader's reply (2001b, ibid.: 166–168); Reader 2026, Archaeopress — whose 2026 monograph proposes a conservative early dynastic or late Predynastic construction date rather than this paper's 3800–3100 BCE AHP window; it is his geological conclusion that the monument predates Khufu that this citation uses).

The Compound Weathering System and the Dating Problem

The erosion of the Sphinx enclosure walls is the product of three compounding mechanisms, not a single measurable linear process.

Runoff erosion. Heavy precipitation concentrates in the carved enclosure, channeling runoff into vertical fissures. Schoch (1992) identified the “rolling and undulating vertical profile” as consistent with precipitation-induced weathering; Reader (2001a) refined this to a rainfall run-off mechanism, noting the non-uniform distribution is more consistent with channeled runoff than diffuse rainfall.

Hawass (1993, ‘The Great Sphinx at Giza: Date and Function,’ Sesto Congresso Internazionale di Egittologia, Atti II: 177–195) argued that the Sphinx’s erosion is explicable through wind action, salt crystallisation from repeated sand burial, and the inherently poor quality of the Member II limestone — a position Reader (2001a, Archaeometry 43(1): 149–165) addresses directly by demonstrating that the non-uniform western wall concentration is inconsistent with any mechanism, including sand-moisture haloclasty, that would be expected to act uniformly across the enclosure walls. Salt crystallization (haloclasty). Gauri et al. (1995) identified continual salt crystallization as a primary weathering mechanism at the Sphinx. Moisture dissolves salts in porous limestone and carries them into rock pores; when moisture evaporates, expanding crystals fracture the surface. Harrell (1994, ‘The Sphinx controversy — another look at the geological evidence’, KMT 5(2): 70–74; see also Schoch’s rebuttal, KMT 5(2): 5–7, and Harrell’s reply, KMT 5(3): 3–4) and Gauri et al. (1995) both propose haloclasty as the primary weathering mechanism; Harrell specifically argues the deep erosion crevices were driven by moisture in the sand that covered the carved rock for much of its history. The key distinction between haloclasty and rainfall-runoff models is distributional: haloclasty should produce broadly uniform deterioration across all exposed surfaces, while rainfall runoff would concentrate damage where water channelled. Reader (2001a, Archaeometry 43(1), 149–165) documents this precisely. The western wall and the western half of the southern wall show substantially deeper erosion than the eastern sections. As Reader (2001a, p. 156) establishes from the spatial distribution of erosion, the more intense damage to the western half of the southern wall cannot be explained by atmospheric conditions or wind-blown sand, which would have weathered the entire wall length equally, nor by burial under sand, which would not have favoured the western half over the eastern. It requires a directional mechanism: channelled surface runoff from the west before Khufu’s quarrying created a catchment barrier. A post-2001 peer-reviewed study of Mokattam formation limestone — the same Middle Eocene formation from which the Sphinx is carved — provides independent support for the distributional argument. Fitzner, Heinrichs and La Bouchardiere (2002, ‘Limestone weathering of historical monuments in Cairo, Egypt,’ Geological Society, London, Special Publications 205: 217–239, DOI: 10.1144/GSL.SP.2002.205.01.17), studying Mokattam limestone weathering on monuments in historic Cairo, documented that salt crystallisation damage in this formation is governed by local microenvironmental conditions — moisture availability, salt loading, and pore-structure variation — rather than producing spatially uniform surface deterioration. Their damage-mapping methodology documents clear correlations between weathering intensity and localised moisture conditions, not uniform exposure to the same environment. A separate petrographic analysis of actual Sphinx rock samples found that the uneven distribution of salts throughout the enclosure wall rocks has caused differential weathering, with variable pore structure producing additional differential decay across strata (Gauri et al. 1995, Geoarchaeology 10(2): 119–133). These findings support rather than contradict Reader’s distributional argument: if haloclasty in Mokattam limestone is demonstrably microenvironment-dependent, then localised western wall intensity cannot be dismissed as a simple function of uniform salt weathering acting on identical surfaces. This non-uniform distribution is inexplicable

under both the simple haloclasty and the sand-moisture models, each of which predicts spatially uniform damage. It requires a directional mechanism: channelled surface runoff from the west. Reader identifies the western plateau — before Khufu's quarrying created a barrier — as the water catchment that fed this runoff. The erosion therefore predates not only Khafre but Khufu: it was already substantially complete before the Great Pyramid was built. The compound model presented here — haloclasty operating within enclosure geometry opened by initial runoff erosion — is presented as more parsimonious than either pure model, since it accounts for both the deep vertical fissuring (runoff-consistent) and the pervasive surface exfoliation (haloclasty-consistent) without requiring one mechanism to explain features better attributed to the other.

Thermal stress cycling. The alternation of hot dry days and cooler nights generates micro-fracturing that opens rock surfaces for subsequent moisture penetration — amplified during the high-variance transitional climate.

These three mechanisms operate multiplicatively. A wet event penetrates salt into newly opened fissures. The dry phase crystallizes those salts and thermally stresses the weakened surfaces. The next wet event acts on material already structurally compromised. Each cycle produces more degradation than the previous. The result is a non-linear signature reflecting event intensity and spacing rather than simple linear time. Fitzner, Heinrichs and La Bouchardiere (2002) document that limestone weathering on Egyptian monuments is strongly dependent on local microenvironment rather than uniform across exposed surfaces — a compounding effect that further complicates linear erosion-rate assumptions.

Standard erosion-based dating assumes a reconstructible rate. Dobecki and Schoch (1992, Geoarchaeology 7(6): 527–544) and Reader (2001a, Archaeometry 43(1): 149–165) both acknowledge this assumption fails for the Sphinx: rock surfaces cannot directly date an archaeological site unless the rate of erosion is known, and for the Sphinx enclosure, erosion rates going back 4,500 years or longer cannot be reconstructed with available data. The erosion signature may reflect the event-intensity structure of the transitional AHP climate rather than a longer linear exposure — meaning researchers dating the Sphinx to 7000–10,000 BCE based on erosion extent may be treating a high-variance episodic climate signature as evidence of greater duration. The integration sequence opens some 1,000 years before Reader's early-to-mid Second Dynasty estimate (c. 2800 BCE); measured against this paper's construction estimate rather than the opening of the sequence, the two positions are separated by roughly five to six centuries. Reader's geological methodology, however, does not claim precision to the century; the margin of error in pre-Fourth-Dynasty erosion dating accommodates the earlier predynastic window proposed here. The two estimates are not in contradiction; they represent different disciplinary thresholds (geology's conservative lower bound vs. cultural chronology's inferred upper bound).

8. The Recarved Head: Physical Evidence for Two Histories

The physical evidence that the Sphinx's current head was carved over an earlier form is one of the most consequential arguments in the debate, originating with Reader's geological analysis rather than with alternative researchers.

The body has spent most of its documented history buried in sand. The head has been continuously exposed. Sand burial protects limestone from wind abrasion; by this logic the continuously exposed head should be more eroded than the periodically buried body. The reverse is in fact observed: despite burial protecting the body, the body is more eroded than the head. This is the anomaly Reader identifies:

Since sand burial is documented to protect limestone from wind abrasion at other Giza sites, a buried body being more eroded than a continuously exposed head has one coherent explanation: the head was recut at a later stage from what remained of an original, more eroded form (Reader 2001a, Archaeometry, 43(1), 149–165; Reader 2026, Archaeopress).

Lehner's own discussion of the head's origin concedes more than is often assumed. Having noted that Reisner (1942, p. 11) held the top of the Sphinx's head to mark the original plateau surface and that El-Baz (1981, pp. 116–22) proposed the head was formed from a natural knoll or hummock, Lehner argues that the monument's siting was deliberate rather than opportunistic, and then adds: 'Nevertheless, there might have been some kind of rise or hummock to the original surface from which the Sphinx was created' (1991, Chapter 1.2). Mariette had earlier held that the Egyptians shaped a natural rock formation already resembling a leonine body. The claim advanced here is the modest one that Lehner allows, not the stronger one that the whole form was naturally produced.The beard fragments found by Caviglia in 1817 (Hassan 1949; Zivie-Coche 2002) are widely identified as a divine beard — the long braided curled type worn by gods and deified kings — rather than a royal beard. Ricke addresses the beard directly and at length. He records that the beard and its supporting strut belong originally to the Sphinx, that it was a plaited, upward-curving divine beard, and that the frequent claim that it was added later — by Thutmose IV or another — has, in his words, not the slightest indication in its favour: the recovered fragments consist of the same rock as the Sphinx, and none of them preserves any trace of a joint face, which would necessarily be present had the beard been assembled from separate blocks. He adds that the divine beard could not have been reworked from a straight, transversely waved royal beard, since the surviving beard remains show the strong forward curve of the divine form; and he observes that the New Kingdom style of the reliefs on the Caviglia fragments dates those reliefs, not the beard (1970, pp. 32–33, Taf. 17a). Ricke himself assigns the whole monument to Khafre, late in that reign. That attribution is his and is not adopted here — the evidence set out across this paper weighs against it — and nothing in his beard analysis depends on it. What his physical evidence establishes is narrower and independent of dating: the beard was divine and original to the monument, not a royal beard later converted. Lehner concurs that the beard is divine and that the Eighteenth Dynasty builders 'repaired the divine beard, which was original to the 4th Dynasty' (1991, Abstract) — that is, he accepts a divine rather than royal beard, while dating it to the Fourth Dynasty. A Fourth Dynasty king commissioning his own monument would give himself a royal beard; the divine beard is consistent with appropriation of an ancient sacred monument rather than original royal commission.

In his 2026 monograph (Chapter 13, 'The Origins of the Sphinx'; confirmed in published peer reviews including The Past, April 2026), Reader proposes the original head represented Mafdet — one of the oldest attested Egyptian deities, a lioness goddess of protective justice and judicial execution — and that a later ruler (Khufu, per Reader) recarved it into a pharaonic portrait. Reader's own footnote to that argument concedes that 'the identification of the quadruped as a lion on these First Dynasty artefacts is somewhat difficult' (2026, p. 227, n. 89), resting the identification on the accompanying heraldic standard rather than on the animal; the authority he cites for Mafdet is Westendorf's 'Die Pantherkatze Mafdet' (1968), and at p. 228 he notes that she was later portrayed as 'an often confusing series of generally less threatening animals, most notably the mongoose'. The link Reader draws between Mafdet and the Shemsu Hor runs through the šms sign, following Wilkinson (1999, p. 220) and von Beckerath (1956, p. 6). On that page von Beckerath reports the reading of Capart and Sethe, who take the sign to be an execution implement — 'ein Hinrichtungsgerät, bestehend aus einem oben gekrümmten Stab, einem aufgewickelten Seil und einem Messer', a stick curved at the top, a coiled rope and a knife — and supports that reading by 'die enge Verbindung des Zeichens mit der in Gestalt

einer Ginsterkatze daran heraufkletternden Göttin Mɐfdt': the close connection of the sign with Mafdet, who climbs it in the form of a genet. Bonnet, quoted there, calls her accordingly 'die Göttin des Richtgerätes', the goddess of the implement and of the punitive authority it represents, and von Beckerath notes her appearance in New Kingdom judgement-of-the-dead scenes beside the divine judges. The association carried by the šms sign is therefore judicial rather than leonine, and involves neither couchant posture nor lion body. This does not settle the species question for the Early Dynastic period, where Reader's reading of Petrie (1901, pl. VII.10) from the reign of Den has not been examined here and his model in any case treats the genet as a later guise. It does mean that the specific bridge from Mafdet to a couchant monument passes through her punitive aspect rather than her form. Mafdet's own textual antiquity has received dedicated Egyptological treatment: Antoniewicz (2009, 'Goddess Mafdet in Egyptian Pyramid Texts,' Przegląd Orientalistyczny 3–4(230–231): 138–143) examines her role specifically within the Pyramid Texts — where she is invoked protecting Ra from venomous snakes during his nightly journey — and concludes that, despite her comparatively marginal appearance in periods after the Old Kingdom, the textual evidence places her among the deities most closely associated with kingship in the third millennium BCE. Reader and the present paper differ on the specific Predynastic lion deity the original form may have represented: Reader proposes Mafdet; this paper proposes the Aker tradition. These are not competing answers to a single question. Mehit is advanced here as a candidate identity — a name, a species, a cult and a geography — while Aker is advanced as a category, the leonine personification of the akhet, which would account for the monument's attested New Kingdom name Hor-em-akhet. The two claims answer different questions and are not mutually exclusive. Both candidate identifications are therefore independently grounded in dedicated study of the same oldest textual corpus, not merely in general deity compendia. These two independent identifications — Reader's from geology and cultic continuity, this paper's from iconographic evolution — both converge on a Predynastic lion deity for the original form. The Egyptian theological framework itself treats this convergence as expected rather than coincidental. Egyptian cosmology is structured on duality, and the divine lioness is a category that subsumes Mafdet, Mehit, Aker, Sekhmet, Hathor (in her Sekhmet aspect), and Tefnut as expressions of the same underlying concept: the dangerous aspect of the Eye. The Eye of Ra (in its dangerous, aggressive, lioness form) and the Eye of Horus (in its restored, pacified, Wedjat form) are the same divine eye in two aspects — the lioness-as-protector and the wedjat-as-restoration. These two identifications are not competing goddess-names: they are two expressions of one theological concept, identified from two different disciplinary angles. The Egyptian framework itself predicts that the underlying concept will be named differently in different cultic contexts. The lion identification is therefore doubly confirmed at the level of concept; the specific divine name is a function of cultic context, and the specific attribution is best left open. The head's disproportionately small size follows directly from this mechanism, but the geological process requires specification. Simple exposure does not create a hard interior core within weathered limestone; rather, weathering penetrates from the surface inward via microfractures, softening the rock progressively. The proposed sequence is therefore as follows. The original lion head was exposed for approximately 700–900 years of compound weathering (runoff, haloclasty, thermal stress), creating a thick rind of softened, friable limestone on all exposed surfaces. When a later dynastic ruler (Khafre or Khufu — the identity remains contested) encountered the monument, the original head was significantly degraded. Rather than carving from the softened outer rind, the carver cut back through it to the relatively unweathered, denser core stone beneath. That core stone — harder and fresher not because it resisted weathering intrinsically, but because the weathered rind was removed — is what was carved into the smaller nemes portrait. The differential preservation is thus not because the core was 'harder' in a primary geological sense, but because the later carving removed the weathered exterior entirely. The proportional anomaly is measurable. Based on Lehner's 1991

survey (Zenodo DOI: 10.5281/zenodo.1203621), the head measures approximately 5.94 m from crown to chin against a body 73.5 m long and 20 m high — a head-to-body length ratio of approximately 1:12. Egyptian royal lion statues conventionally observe proportions closer to 1:8 to 1:9; the Sphinx's head would need to be approximately 50 per cent larger to match its body at the normal canon. Historical architect Dr Jonathan Foyle observed that 'the head and body were massively out of proportion' and proposed that the Sphinx originally had a lion head, reduced when a later ruler recarved it (as documented in Ancient Origins, 'Depicting Man or Beast?' 2023, citing Daily Mail, 2008). This is precisely what the recarving hypothesis predicts: a head carved down from an eroded larger form produces exactly the 1:12 ratio observed, while a purpose-built Fourth Dynasty commission by craftsmen who demonstrably produced correct proportions in every other Giza statue does not.

The Preserved Name: Mehit

Independent philological evidence provides a further line of convergence — and the most consequential one, because it comes not from geology, archaeology, or climate science, but from the monument's own preserved name. This paper proposes, from mainstream Egyptological sources, that the Sphinx was originally called Mehit, a lioness, and that this name appears in an exclusive royal court title reaching back to the First Dynasty.

The evidence is briefly this. A couchant lioness of the sign-type Weill assigns first to Mehit of Thinis and Sebennytos is current in royal contexts under Horus Aha and Horus Djer, on three cylinders from Saqqara published by Emery (1939, figs. 22, 23, 28), one of Djer's from Abydos, the Abydos ebony cylinder, and fragmentary impressions from Naqada. The goddess is named in a priestly title, ḥqꜣ Mḥyt, on the slab stela of the king's son Wepemnefret at Giza G 1201, rendered by Der Manuelian (2003, p. 32) as 'heka-priest of Mehyt' without hedge or query. Weill, writing independently in 1961, records the same title from the same period. Her primary cult centres are Hierakonpolis and Thinis, both nodes of the corridor sequence. Weill adds Sebennytos to the list; that centre lies in the Delta rather than on the corridor, and is recorded here rather than absorbed into the pattern. One occurrence, one man, one tomb: that is the extent of the goddess's attestation in the Giza slab stelae, and the claim made here rests on nothing more.

The full philological case — the archaic cylinders and Weill's analysis of them, the two competing counts of title-holders, the Junker and de Wit dispute over the animal, the distinction from Mafdet, the evolution of the sign from three shafts to one, and the wider pattern by which Early Dynastic deities acquire names only once writing arrives — is set out in the addendum to this paper, *The Lioness with the Broken Stems*.

Mehit's attributes map onto the corridor framework at three independent levels: geographically, in cult centres at Hierakonpolis and Thinis; functionally, as a guardian associated with holy places; and etymologically, through the root mḥ, 'to fill, to make whole, to restore'. That last reading is not new. Junker, in the study that established the Onuris legend, devotes a section to the name and concludes that if Mḥ.t means 'the Full One' then it can refer only to the full Eye of Horus, and that — arising so early — it must denote the stolen Eye itself, just as the Inj of her companion Onuris denotes the bringing of it back (Junker 1917, pp. 139, 144). On his account the agency lies with Onuris, whose name means the bringing back, while Mehit is the Eye itself in its restored state. That is the reading followed here, and it is the source of this paper's subtitle.

On this reading, the recarving is itself evidence of the monument's antiquity relative to its carver: a Fourth Dynasty ruler who found an ancient, eroded lion-figure and saw in its weathered head an opportunity to claim it by reshaping its face in his own image. This would also explain why no Fourth Dynasty text credits the construction — the recarving was an act of appropriation, not original building.

The Nemes as a Chronological Anchor

The Sphinx's current head wears the nemes headdress, the royal striped headcloth worn exclusively by pharaohs. The earliest known depiction is on an ivory sandal-label of Den from Abydos, now British Museum EA55586 (registration 1922,0728.2), dated by the Museum to approximately 2985 BCE. The Museum's own description of the object records that, 'instead of a crown, however, Den wears an archaic version of a royal headcloth, with the rearing neck and head of a royal uraeus cobra at his forehead'. The object is published as Spencer, Catalogue of Egyptian Antiquities in the British Museum V: Early Dynastic Objects (1980), no. 460, and discussed by Russmann, Eternal Egypt (2001), pp. 67–68, no. 2, and Regulski (ed.), Hieroglyphs: Unlocking Ancient Egypt (2022), pp. 148–149; further references at Kaplony, Die Inschriften der ägyptischen Frühzeit I (1963), pp. 284, 341, and II (1964), p. 983 n. 1551, p. 986 n. 1556, and Porter and Moss (1960–2007), Topographical Bibliography V, p. 84. The Museum describes the headcloth as 'an archaic version' rather than as a fully developed nemes, so the label furnishes a terminus for the royal headcloth tradition rather than for the nemes in its classic form. Reign dates follow Hornung, Krauss and Warburton (2006, Ancient Egyptian Chronology, Brill), who place Den in the mid-First Dynasty; it is fully established as a royal symbol from the late 2nd Dynasty (Khasekhemwy, c. 2686 BCE) and becomes standard through the Old Kingdom. The nemes is a post-unification, dynastic symbol with no attestation before the First Dynasty. This provides a chronological anchor: whatever was on the Sphinx before, the current human face with its headcloth was carved after approximately 2985 BCE at the absolute earliest, on the earliest attestation currently known. The Predynastic framework therefore proposes two separate events: the BODY is Predynastic; the FACE is dynastic. Reader's differential weathering (body more eroded than the continuously exposed head) is the physical evidence of that interval between the two events.

The headdress has also been read stylistically, with results that bear directly on the attribution. Stadelmann, examining the head as an art historian rather than a geologist, finds the nemes entirely pleated and of the archaic type first appearing under Djoser, a dynasty before the Fourth: the headcloth is not yet bound by a frontal band, and the pleats terminate freely above the lower border. From Djedefre onward, he observes, the frontal band is integral to the nemes, a rule holding on every Khafre statue, where only the lappets are pleated while cap and appendix remain smooth (1999, pp. 875–876). He records further divergences from Khafre's statuary in the curvature of the lateral wings, the angle at which the frontal pleats meet the outer edges of those wings, and the placement and detailing of the uraeus, which on the Sphinx rises from the lower border of the headcloth rather than from the upper edge of a frontal band.

He treats the beard as decisive. The absence of any strap indication around the jaw, and the absence of a ressaut, indicate that in the Old Kingdom the face was beardless; the fragments recovered by Caviglia he assigns to a New Kingdom addition, made once the monument had been identified with Harmakhis and furnished with a braided divine beard supported on a buttress built against its chest (1999, pp. 876–877). Invoking Sourouzian on the Old Kingdom beard convention, and noting that Sneferu and Khufu are beardless throughout while Djedefre, Khafre and Menkaure are not, he eliminates Khafre on this ground alone (1999, pp. 877–878). That premise does not hold in the specialist literature. Sourouzian's own survey of royal representations to the Sixth Dynasty concludes that no pattern can be discerned in the

presence or absence of the royal false beard (1995, pp. 144–147); Stadelmann himself had reached the same conclusion the previous year (1998, pp. 366–367), and the same conclusion has since been reached independently for the Old and Middle Kingdoms, as Hendrickx, De Meyer and Eyckerman record (2014, p. 139 and n. 30). Documented exceptions include a First Dynasty royal figurine without the false beard (London, BM EA.37996) and the two Khasekhemwy statues of the Second Dynasty (Cairo JdE 32161; Oxford, Ashmolean E.517). The beard evidence therefore bears on the question but does not settle it, and Stadelmann's elimination of Khafre on this ground alone is stronger than the convention he invokes will support. The same study rejects the principal stylistic argument for Khafre: Lehner's superimposition of the Sphinx's facial contours on the diorite Khafre-with-falcon statue, Cairo CG 14, in which, on Stadelmann's reading, neither the facial contours nor the form of the nemes coincide, and which he judges methodologically unsound because shifting the angle of view alters the result entirely (1999, p. 872).

Stadelmann's own conclusion is not the one advanced here: he assigns the whole monument, body and head, to Khufu, as an integral element of that king's necropolis (1999, p. 879), and he dismisses the geological redating literature in sharp terms (1999, p. 867). What his analysis establishes independently of his conclusion is that the headdress is of a type older than the Fourth Dynasty norm, that the Old Kingdom face bore no beard, and that the standard stylistic case for Khafre does not hold. Each of those findings is consistent with the two-event model proposed here, in which the face is dynastic and the body is not. Translations from the French are the author's.

The headdress has been used as a dating instrument before, with very different results. Borchardt, in 'Über das Alter des Sphinx bei Giseh', attempted to date the monument from the painted line around its eyes and the fashion of the pleating of its nemes, concluding that neither feature occurs outside the Twelfth Dynasty and specifically the reign of Amenemhat III, whose statues he held the face to resemble. Hassan, who reports the argument in order to dismiss it as an astonishing flight of fancy, rejects it on the ground that the pleating and eye-paint evidence is not borne out by the statuary held in the national collections of Europe (Hassan 1949, pp. 86–87). The episode is instructive rather than merely curious: stylistic readings of the nemes have produced answers separated by more than a thousand years, and the chronological anchor advanced here therefore rests on the date of the headdress's earliest attestation rather than on the style of its pleating. Hassan's own position, stated on the same pages, is that the monument postdates the completion of Khafre's complex.

A further connection between the nemes and the monument's lion character has been proposed, though it should be reported with care. The costume historian Daniel Delis Hill describes the headdress as having 'a long tail at the center back' which 'symbolized a lion's tail' (2011, p. 46). That reading is not established in the Egyptological literature. The standard account of the nemes derives its rear queue from a practical function — gathering and covering the wearer's hair — rather than from leonine symbolism, and no Egyptological study located here argues otherwise. The proposal is therefore recorded as an interpretation from outside the field, not as evidence, and nothing in the argument advanced here depends on it. What does not depend on it is the plain iconography: in its recarved dynastic form the monument still couples a lion's body with a royal head. The transformation reframed the lion symbolism within dynastic iconography rather than erasing it.

The surviving pigment evidence adds a further dimension consistent with this iconographic reading. Archaeologists have confirmed traces of red pigment on the face, yellow on the body, and blue in the nemes stripes. The primary source is Lehner (1991, Zenodo DOI: 10.5281/zenodo.1203621), whose five-year ARCE field survey documented the surviving

pigment evidence directly; see his Chapter 9.9, ‘Color’, at p. 389. Lawler (2006, ‘Uncovering Secrets of the Sphinx,’ Smithsonian Magazine, November 2006) quotes Lehner directly: residues of red pigment are still visible on the face; traces of blue and yellow paint elsewhere suggest the Sphinx was once painted in vivid colour across the full body. In ancient Egyptian symbolic language, colour (iwen) was not decorative but semantic — the Egyptian words for ‘character’ and ‘colour’ were identical (Wilkinson, R.H. 1994, Symbolism and Magic in Egyptian Art, London: Thames and Hudson). Red (desher) signified life force and the solar-protective Eye of Re; yellow/gold (nebu) signified the divine flesh of the gods and immortality; blue (irtyu) signified the celestial realm and cosmic order. The three colours together encode the full cosmic register of a Horus-guardian figure: earthly protector, divine body, celestial mediator. The same three colours — blue faience, gold/yellow, and red carnelian — are the three materials in which Wedjat amulets were produced, each selected for specific magical potency associated with the same cosmic domains (Metropolitan Museum of Art, Egyptian Amulets; Glencairn Museum; Egypt Museum). The Sphinx, as a proposed Horus-related guardian of the eastern horizon, carries a painted colour scheme consistent with the Wedjat iconographic tradition the Zep Tepi Series proposes the corridor population transmitted. This observation is offered as a consistency note, not as an independent prediction; its significance depends on the broader Predynastic framework.

Aker: Archaeological Evidence for the Lion-Headed Sphinx Tradition

No ancient text describes the Giza Sphinx with a lion head. But there is archaeological and iconographic evidence for precisely the tradition the recarving hypothesis requires — it is recorded in the Aker deity tradition rather than in descriptions of the Giza monument specifically. Aker is among the oldest attested earth-and-horizon deities in the Egyptian pantheon (Pinch, G. 2002, Handbook of Egyptian Mythology, ABC-CLIO). His earliest securely documented form, in the Old Kingdom Pyramid Texts, shows two lions — the Akeru — facing outward from a central point, guarding both horizons simultaneously (Hornung, E. 1982, Conceptions of God in Ancient Egypt, Cornell University Press, pp. 116–117). The single recumbent lion guarding the eastern horizon — the gate of the dawn — is a later development documented through the New Kingdom (Wilkinson, R.H. 2003, The Complete Gods and Goddesses of Ancient Egypt, Thames and Hudson). His mythological role was first fully codified in the Pyramid Texts of Teti (c. 2345 BCE; Faulkner, R.O. 1969, The Ancient Egyptian Pyramid Texts, Oxford University Press; Allen, J.P. 2005, The Ancient Egyptian Pyramid Texts, SBL Press), which express the wish that the Akeru will not attack the king — confirming a functional guardian role already ancient enough by 2345 BCE to require formal textual appeasement. Aker is named explicitly even earlier than this, in the Pyramid Texts of Unas — the oldest surviving Pyramid Texts corpus, inscribed one reign before Teti's and the earliest religious texts known to survive (Allen 2005, The Ancient Egyptian Pyramid Texts, SBL Press) — where Pyr. 325a reads ‘He travels through Shu and strides through ꜣkr’ (Mercer, S.A.B. 1952, The Pyramid Texts in Translation and Commentary, vol. I, Longmans, Green & Co., New York, at 325a; public domain). Mercer’s translation records three further Aker passages bearing on the horizon-gate reading advanced here: ‘The double doors of Aker are open for thee; the double doors of Geb are open for thee’ (796b); ‘Aker stands up for thee; Shu dries for thee’ (1553a); and ‘The door of Aker is open for thee; the double doors of Geb are open for thee’ (1713a). In each case Aker functions as a threshold or portal, paired with Geb; in the last instance the door is singular. The deity is therefore attested by name across the very earliest stratum of the Pyramid Texts tradition, not as a single Teti-specific occurrence. de Wit, whose monograph remains the standard treatment of the lion in Egyptian religion, holds that parts of the Pyramid Texts reach back well before the First Dynasty, and declines to follow Kees in dating the corpus to the Sixth Dynasty merely because it is inscribed in Sixth Dynasty pyramids (1951, pp. 91–92). He records the Aker passages relied on here at Pyr. §325, §796

and §1713, and notes at §1713 that the door of Aker is single where the doors of Geb are double, the asymmetry preserved in the translation quoted above. The leonine tradition on which these passages draw is older than the texts that carry them: de Wit's concluding judgment is that from prehistoric times onward Egypt presents both a lion-deity and a lion-king, and among the evidence he assembles for that period are the prehistoric painting at Hierakonpolis, a prehistoric palette from Abydos bearing a lion, lions among the pottery marks of the prehistoric period, and a prehistoric lion statuette in Berlin published by Scharff (Die Altertümer der Vor- und Frühzeit II, pl. 18, p. 61) — recumbent leonine sculpture in the round from before the First Dynasty.

Aker's iconographic evolution mirrors exactly what the recarving hypothesis proposes for the Sphinx. de Wit traces the same development from earlier material: the double-lion protomes on First Dynasty artefacts — published by Petrie from the Royal Tombs, by Emery from Hor-Aha and by Quibell — take, in his words, exactly the form of the god Aker known from the later texts (1951, p. 91). The concept evolved from pure recumbent lion to human-headed sphinx during the dynastic period — precisely the trajectory the recarving hypothesis assigns to the physical Sphinx at Giza. By the late New Kingdom, the Giza Sphinx was identified with Hor-em-akhet (Horus in the Horizon), a solar deity whose iconographic fusion of falcon and horizon conceptually parallels Aker's role as eastern horizon guardian. The New Kingdom title commonly rendered as "Lion of the Horizon" is an interpretive gloss on Hor-em-akhet rather than a literal translation; the Sphinx's New Kingdom identification with a horizon deity nonetheless converges with Aker's oldest documented function: recumbent lion guarding the eastern gate of the dawn (Wilkinson, R.H. 2003, The Complete Gods and Goddesses of Ancient Egypt, Thames and Hudson).

The convergence is precise: Aker's fundamental role is guardian of the eastern horizon; the Sphinx faces 90° east, the equinoctial sunrise. Aker's original form is a Predynastic recumbent lion; the Sphinx's body is a recumbent lion. Aker's iconographic evolution during the dynastic period produces human-headed sphinxes; the Sphinx's head was recarved into a human royal portrait. The Sphinx's own New Kingdom title reveals the identification that was always conceptually present: it was, and remained in cultural memory, the Lion of the Horizon — Aker's oldest form. The recarving hypothesis does not require an ancient text naming the lion head. It has the iconographic tradition that documents the lion-to-human-head evolution, preserved in the same religious system that eventually called the Sphinx by its original name.

The Corridor Precursor: Therianthropic Tradition Along the Highland Route

The Aker concept did not emerge in isolation within the Nile Valley. The Highland Corridor populations whose northward migration the Zep Tepi framework documents across seven nodes carried a therianthropic iconographic tradition along the entire length of their route. At the Messak Plateau (Fezzan, Libya — nodes 3 and 4 of the corridor), therianthropic figures combining human heads with animal bodies are specifically documented alongside felid imagery, including the iconic 'Fighting Cats' scene: among the most recognisable images in Saharan rock art (Le Quellec 1993; British Museum African Rock Art documentation). At the Gilf Kebir (node 5), the Wadi Sura shelter — the 'Cave of Beasts' — contains approximately 8,000 figures dated to c. 6,500–4,400 BCE, including numerous hybrid and therianthropic creatures (Kuper et al. 2013, Wadi Sura — The Cave of Beasts, Heinrich-Barth-Institut, Köln; Förster, Riemer and Kuper 2012, in Huyge, Van Noten and Swinne (eds.), The Signs of Which Times?, Royal Academy for Overseas Sciences, Brussels). Critically, German Archaeological Institute researchers Förster and Riemer (2011) presented at the Fourth International Conference on Predynastic and Early Dynastic Egypt under the title 'Wadi Sura: The Origins of Ancient Egyptian Mythology and Symbolism in the Western Desert?' — explicitly investigating whether

this corridor rock art tradition is the iconographic source of Egyptian religious symbolism. Their abstract states that the views 'that Predynastic Egypt was both a gift of the Nile and a result of climatically induced migrations from the Western Desert have endured for a decade', and that this position 'has generally been accepted, as well as supported by archaeological assessments' — citing parallels between the ceramic and lithic traditions of the oases and Djara (Förster and Riemer 2011, pp. 31–32). At Hierakonpolis HK6 (node 7, the corridor's Nile Valley terminus), the same population's tradition culminates in lion burials within the highest-status ceremonial complex in Predynastic Egypt (Van Neer, Linseele and Friedman 2004, OLA 138, pp. 67–130; Linseele, Van Neer and Friedman 2009, JARCE 45: 105–136). The Aker tradition — recumbent lion, guardian of the eastern horizon, first codified in Old Kingdom texts but acknowledged as Predynastic in origin — is the Nile Valley synthesis of this iconographic heritage. The corridor populations brought the guardian-creature tradition; the lion burials at Hierakonpolis grounded it in leonine symbolism; the Sphinx at the geographic midpoint of the corridor expresses it in stone.

9. Whose Face? The Identity Question

If the current head is a recarving of an earlier form, the question of whose face is present is separate from who built the body. The face is not identified by consensus even within mainstream Egyptology: Khafre is the most common attribution, while Khufu has been argued at length on stylistic and archaeological grounds. The Khafre attribution itself is acknowledged to be circumstantial (Hassan 1949).

The nemes headdress on the current face establishes a hard chronological lower bound: the face was carved after the nemes became a dynastic royal symbol, no earlier than approximately 3100 BCE and most likely in the Old Kingdom. This eliminates Predynastic Shemsu Hor leaders as the face's subject entirely — they predate the nemes tradition. The face must represent a post-unification dynastic ruler. The anomaly is not that the face is "unknown" but that despite the conventional attribution to Khafre — one of the best-documented pharaohs of the Old Kingdom with multiple surviving portraits — independent scholarly analysis has not established a clear match to Khafre's known statuary: Egyptologists disagree on the identification, Stadelmann arguing that the facial form, the ears, the archaic type of the nemes and above all the absence of a beard eliminate Khafre outright and place the head in the reign of Khufu (1999, pp. 874–878). Two of the field's principal authorities on Giza thus assign the same face to two different kings, and the disagreement turns on the primary stylistic evidence rather than on any inscription. For a pharaoh's supposed primary monument, this attribution uncertainty is itself anomalous. A ruler who appropriated an ancient monument by recarving its face would derive authority from the monument's antiquity, not from an inscription: the recarving IS the claim of ownership. Leaving no inscription on an inherited sacred monument is consistent with appropriation rather than original construction. This is offered as an explanatory framework, not a conclusion.

10. Why the Sphinx Was Abandoned: Two Layers of Evidence

A monument built, then abandoned without maintenance, then repeatedly rediscovered by successive cultures is anomalous for a dynastic construction. The Predynastic origin framework produces a coherent explanation operating at two distinct levels.

Layer One: No Institutional Maintenance Apparatus

A pastoral semi-nomadic population that carved a monument at a sacred site during a seasonal or ritual occupation would not have established the permanent temple staff, resource allocation, and administrative hierarchy required for ongoing maintenance. When the Shemsu Hor horizon was absorbed into the consolidated state that followed unification, the monument's original custodians ceased to exist as an independent social formation. The monument was inherited by a civilization that encountered it as an already-ancient sacred object — not as something they had built and were responsible for maintaining. The absence of a Sphinx priesthood through the entire Old Kingdom is the institutional signature of this inherited, unclaimed status.

Layer Two: The Fourth Dynasty Abandonment

The archaeological evidence documents a second, distinct abandonment event: the mid-task departure of Fourth Dynasty workers who were attempting to complete the Sphinx Temple. Partially quarried bedrock remains at the site. Tool marks show inconsistent finishing across different areas. AERA documents the temple was never completed and construction debris was never cleared from the interior (AERA, aeraweb.org/khafres-monuments/, "Khafre's Monuments as a Unit"; Hawass and Lehner documentation). Construction debris was never cleared from the temple interior. This is not the behavior of a builder completing their own commission — it is the behavior of a program that was deprioritised. The most consistent explanation is that the Sphinx Temple construction was a secondary program launched after encountering an existing ancient monument, and was abandoned when the primary construction effort — the pyramid complex — consumed all available capacity.

11. Ancient Accounts and the Naming Trajectory

Herodotus: Silent at Giza

Herodotus visited Egypt around 440 BCE and devoted Book 2 of his Histories to a detailed account of the pyramids — describing dimensions, builders, and food consumed during construction — yet makes no mention of the Great Sphinx. He describes androsphinxes elsewhere (Book 2.175). One traditional explanation is that the Sphinx was buried in sand during his visit and thus not visible; Evans (2017, 'Herodotus and the missing sphinx,' Journal for Semitics 25: 15–32) challenges this, arguing the omission was literary rather than physical. Whether the cause was burial, literary convention, or timing, the omission is a documented fact. Crucially, this paper does not rely on Herodotus's silence as primary evidence — even if Evans is entirely correct that the omission was literary, this does not affect the paper's core argument. The evidentiary weight rests on the multi-millennium burial cycle documented from approximately 1500 BCE onward (Zivie-Coche 2002) through repeated New Kingdom, Roman, medieval, and modern clearances. Whether Herodotus omitted the Sphinx for literary or physical reasons in ~440 BCE, the Dream Stele of Thutmose IV (~1400 BCE) independently establishes that the monument was buried and required divine intervention to be cleared more than a millennium before Herodotus wrote. By approximately 1500 BCE the monument was already buried to the neck (Zivie-Coche 2002).

Egypt's Own Record of the Name

The philological convergence operates at four independent levels of Egypt's own record. Taken together they constitute a self-contained evidentiary chain that does not depend on any single interpretation.

First, the Book of the Dead — a New Kingdom corpus — attests Mehet-Weret independently of both the Giza monument and the Ptolemaic record: 'I behold Ra who was born yesterday from the thighs of the goddess Mehet-Weret.' (Budge 1895, The Egyptian Book of the Dead). This is not a Late Period invention: it is one of the oldest theological statements in Egyptian history, carved in royal pyramids two thousand years before any archaizing program begins. The same corpus ties her explicitly to flowing water in a second, independent passage: in the Pyramid Texts of Unas, the king is said to 'judge in the Great Flood' — the literal meaning of her name — among pools and fields that the goddess excavates and establishes for him (Piankoff, A. 1968, The Pyramid of Unas, Bollingen Series XL.5, Princeton University Press, Utterance 254). Two independent passages within the oldest surviving Egyptian sacred text, not one isolated line, attest Mehet-Weret as both birth-giver and flood-goddess.

Second, the Book of the Dead, Spell 17, provides the decisive identification from Egypt's own sacred texts: 'Mehet-Weret is the Wedjat.' (Budge 1895, The Egyptian Book of the Dead, Spell 17). On this hypothesis, the monument is named Mehit. Mehet-Weret is identified with the Wedjat in the Book of the Dead, Spell 17 — that identification is Egypt's own theological statement, not this paper's inference. The monument faces the Wedjat 1/4 orientation. Three linguistic steps from the same root mḥ ('to fill, to restore') produce: mḥt ('she who fills/restores', Mehit), mḥt-wrt ('the Great Restorer', Mehet-Weret), and the canonical formulation mḥ irt 'n irt ḥr — 'filling the Eye of Horus' — the Wedjat restoration. All three from the same root. All three converging on the same concept.

Third, Early Dynastic seal impressions. Smith, publishing the Wepemnefret stela, identified the lioness of the second title as Mehit, the lioness goddess of the Thinite nome, and observed that a similar form of the lioness appears on Early Dynastic seal designs, where she is connected with the Upper Egyptian sanctuary (1963, p. 12). The attestation therefore stands at the very beginning of the written record, centuries before Khafre. Toby Wilkinson (1999, Early Dynastic Egypt, Routledge, p. 250) independently records that Mehit 'may have been a general protector deity, associated with holy places' in Early Dynastic times, and associates her with Hierakonpolis and — primarily — This. This is mainstream Egyptology, not alternative scholarship.

Taken together, these six attestations constitute a self-contained philological case within Egypt's own record, resting entirely on mainstream Egyptological publication. The Convergence section and the comparative model table bring this philological strand together with the physical, geological, and iconographic lines documented in Sections 1–14.

The Monument Already Buried: Ancient Testimony

By approximately 1500 BCE the Sphinx was already buried to the neck — this state is documented not from first-century Roman observation but from the evidence of the Dream Stele itself and from Zivie-Coche (2002, Sphinx: History of a Monument, Cornell University Press), who documents the New Kingdom clearance context comprehensively. Thutmose IV's Dream Stele (~1400 BCE) records the divine encounter with "Harmachis who presides over the deserts" and the promise of kingship in exchange for clearing the sand — which is not the narrative a dynasty would use for its own monument built three centuries earlier. Pliny the Elder (Natural History 36.77, c. 77–79 CE) adds that the Egyptians of his own day — after three millennia of literate civilization — had 'passed it over in silence' and debated whether it had been transported to the site. The 'transported' claim is itself evidence against a carved-in-place origin, showing that the living memory of the monument's origin had been lost. This is consistent with a Predynastic construction whose founding history predated continuous institutional memory. However, Pliny's testimony is also double-edged: if the Egyptians had lost the correct

memory (carving from bedrock) and substituted an incorrect one (transportation), it demonstrates that their late-period knowledge was unreliable. This observation carries its own evidential limitations (Pliny writes from the 1st century CE, not the Old Kingdom), but the naming trajectory over four millennia is consistent with one interpretation: each culture that encountered the monument inherited it as already ancient.

The Multi-Millennium Burial Cycle

The documented clearance cycle spans more than three millennia and establishes that the Sphinx has been buried and rediscovered multiple times, by multiple unrelated civilizations, none of whom maintained continuous custodial responsibility:

c. 1500 BCE: Already buried to the neck. Only the head visible (Zivie-Coche 2002).

c. 1400 BCE (Thutmose IV): Dream Stele records clearance and the divine encounter with Harmachis/Hor-em-akhet. The Sphinx promises Thutmose IV kingship in exchange for clearing the sand. This is not the narrative of a ruler maintaining his dynasty's own monument — it is the narrative of encountering an ancient god buried in the desert.

c. 1279–1213 BCE (Ramesses II): Cartouches at the site suggest a further engagement and possibly a second clearance.

1st century CE (Roman period): Cleared again in honour of Emperor Nero and the Governor Claudius Babillus, according to a stela set up by the people of the nearby village of Busiris (Lehner 1991, Chapter 2.1, citing Schwartz 1950 and Dittenberger 1960). The Roman pavement led to a stairway more than 12 metres wide, narrowing as it rose in thirty steps to a viewing platform some 19 metres east of the forepaws, with a podium from which the visitor looked down into the Sphinx sanctuary (Lehner 1991, Chapter 2.2, after Vyse 1842). Roman and Greek graffiti left by visitors. The monument is again treated as an ancient relic — a tourist attraction for a civilization that viewed it as antiquity.

Medieval period: Buried again. Arab travellers describe only the head visible above sand. The monument is called Abu al-Hol — Father of Terror — by people who have no knowledge of its origin.

1816–1936 (modern excavation): First systematic modern clearance by Caviglia (1816), followed by Baraize's full excavation (1925–1936). Neither excavator published his own account of the work; both clearances are documented in Hassan (1949) and Zivie-Coche (2002). This is the first time in its documented history the monument has been kept continuously clear of sand.

A monument built by the Fourth Dynasty as the guardian of Khafre's mortuary complex would not require repeated clearance by Egyptian pharaohs, Roman emperors, medieval visitors, and modern archaeologists across three millennia. No other monument in Khafre's complex has this burial history. Butzer, Butzer and Love document exceptional climatic anomalies producing devastating floods 'especially at the feet of the Giza plateau, leading to the progradation of alluvial fans onto the Nile floodplain, covering older branch channels' (2013, as summarised by Younes et al. 2024), and Younes et al. record for the pre-pyramid middle Holocene a Wadi Menkaure 'which transfers flashflood waters resulting from short and intense rainfall events from the plateau to the floodplain' (2024). Episodic flood deposition at the foot of the plateau therefore periodically buried and re-exposed features there, producing an irregular exposure–burial cycle inconsistent with steady-state erosion models.

The Naming Trajectory: A Monument Without a Founding Name

Old Kingdom: no name recorded. New Kingdom: renamed Hor-em-akhet (solar deity, not a builder's name). The principal New Kingdom monument of this cult, the stela of Amenhotep II from the inner hall of the temple of Haurun-Horemakhet north-east of the Sphinx, was published by Varille (BIFAO 41 (1942), 31–38; Porter and Moss (1960–2007), Topographical Bibliography III.2, 408). New Kingdom Canaanite workers: renamed Pehor or Pehoron (the Canaanite god Hauron, whose cult they built at its base). Greek visitors: renamed Sphinx (their own mythological creature). Medieval Arabs: Abu al-Hol (Father of Terror), ultimately derived from the Canaanite Hauron name via Coptic. Every culture that encountered the monument renamed it with their own cultural framework. Monuments with known builders receive the builder's name. This monument received everyone's name except its own.

The Inventory Stele

The Inventory Stele, discovered by Mariette in 1858, states that Khufu found the Sphinx already existing at Giza. Mainstream Egyptology dates the stele to the 26th Dynasty (~670 BCE) and treats it as a late retrospective, though the basis for that dismissal has itself been debated within Egyptology. The genre to which it is typically assigned is itself well established in mainstream Egyptology: Lichtheim (1980, Ancient Egyptian Literature, Volume III: The Late Period, University of California Press) catalogues the Bentresh Stela and the Famine Stela as canonical Late Period 'pseudepigrapha' — texts composed centuries after the events they describe, in the deliberate guise of much earlier documents, for propagandistic or devotional purposes. Classifying a text as pseudepigraphal dates its composition; it does not by itself settle whether the tradition the text claims to preserve is invented or inherited. Assmann's (2011, Cultural Memory and Early Civilization, Cambridge University Press) influential study of Late Period Egyptian cultural memory documents how such texts, and the temples that housed them, functioned as repositories assembled from genuinely older material, even where the surface narrative and specific attribution are demonstrably products of their own late date of composition. This paper treats the stele as unresolved. Whether authentic or retrospective, the fact that its claim — that Khufu found the Sphinx already present — was considered plausible enough to record reflects the absence of any clear builder attribution in the broader cultural memory.

The radiocarbon evidence from the Sphinx Temple requires explicit engagement. Haas et al. (1987) dated organic material from the Sphinx Temple to a range of 2746–2085 BCE, with an average of approximately 2400 BCE (these two determinations are reported here at second hand; the BAR chapter is not digitised and has not been consulted directly). That chapter, reviewing 72 new determinations from Old Kingdom monuments measured by liquid scintillation at Southern Methodist University and by accelerator mass spectrometry at ETH Zürich, reports assays diverging on average by some 300–400 years from the historical chronology — in the direction of greater apparent age (Weinstein 1989, pp. 102–103). Bonani et al. (2001) published the full corpus from the 1984 and 1995 campaigns and report that the match between the radiocarbon and the historical chronologies is only approximate; Dee et al. (2009) count 269 measurements in that corpus, spanning the First to Twelfth Dynasties and including the Sphinx. Their Bayesian reanalysis of the Fourth Dynasty subset, which models the completion date of each monument rather than averaging its measurements, returns a single combined determination for the Sphinx of 3982 ± 80 BP, modelled to 2525–2422 cal BC at 68 per cent probability and 2558–2361 cal BC at 95 per cent. That range falls squarely within the Fourth Dynasty and is what the two-event model predicts: it dates the temple and the associated Fourth Dynasty works, not the body beneath them. These dates are not inconsistent with the

two-event model proposed here: the Sphinx Temple was constructed after the Sphinx body existed, using blocks quarried from the Fourth Dynasty deepening of the enclosure. A Sphinx Temple construction date in the range 2746–2085 BCE is fully compatible with Fourth Dynasty or late Early Dynastic construction of the temple over a pre-existing monument.

Two further points: first, Giza radiocarbon determinations are systematically offset toward apparent ages older than the historical estimates. Dee et al. (2009) reanalysed the Bonani corpus and found the largest discrepancies in the Fourth Dynasty, where 158 measurements from twelve sites returned dates for the most part 200–300 years older than expected; Bayesian outlier modelling in OxCal brings those calibrated ranges into much closer agreement with the conventional chronology. Whatever the mechanism — inbuilt age in charcoal, reuse of older material, or intrusive samples — the direction of the bias at Giza runs toward apparent antiquity, so a single early determination from mortar is weak evidence for an early monument. Second, and critically, none of the Sphinx Temple dates corroborate a prehistoric construction date — but they also do not establish a Fourth Dynasty date for the Sphinx body. The temple was built over the body; the radiocarbon evidence dates the temple, not the body. The body itself has never been radiocarbon dated.

The gap of approximately 1000 years between the proposed pre-dynastic body (c. 3400–3300 BCE) and the radiocarbon-dated temple construction (c. 2400 BCE) requires explanation. Under the two-event model, the monument was buried under sand for much of that interval, with no custodians maintaining it, and was rediscovered by Fourth Dynasty builders who then constructed the temple. This explanation is constrained but not unconstrained speculation. The Sphinx was buried to its neck by approximately 1400 BCE — when Thutmose IV erected his Dream Stele treating the monument as a deity of remote antiquity — and required systematic re-excavation by Baraize (1925–1936; Zivie-Coche 2002) after millennia of recurring burial, demonstrating that sand re-accumulation within the enclosure is a documented recurrent phenomenon under the current arid regime. During the earlier, more hydrologically dynamic 3100–2500 BCE window — before full aridification — episodic sand-filling and re-exposure is the expected geomorphological behaviour rather than an anomaly requiring special explanation. The flood and alluvial-fan record at the foot of the plateau discussed above (Butzer, Butzer and Love 2013; Younes et al. 2024) indicates episodic deposition capable of burying and re-exposing features there, and so intervals of monument invisibility. The monument's absence from the administrative record during 3100–2500 BCE is therefore consistent with well-documented Giza sedimentological behaviour, not with sustained continuous exposure that would have demanded administrative acknowledgment. No direct evidence documents what specific clearance or re-burial events occurred within this interval; the gap is a constrained unknown with documented geomorphological parameters, not an evidential void. The model's explanation is consistent with the physical record even if it is not yet independently confirmed.

12. A Proposed Construction Timeline

The convergent evidence now permits a proposed construction and modification timeline, presented as a working hypothesis with each phase grounded in documented evidence. No phase is claimed as proven. The sequence is offered as the most internally consistent arrangement of the available evidence.

Phase 1: c. 3400–3300 BCE (Original carving, Naqada IIC northward expansion phase)

The Sphinx body is carved during the documented Naqada IIC northward expansion phase. On the Bayesian radiocarbon model of Dee et al. (2013, Proceedings of the Royal Society A 469(2159)), Naqada IIC–D is placed at c. 3450–3325 BC, so the construction estimate advanced here falls within that independently modelled block. The block is the appropriate unit: Dee et al. (2014, Journal of Archaeological Science 46: 319–323) tested the Naqada sequence against all admissible radiocarbon evidence and found that the simplified chronology of blocks — IC–IIB, IIC–IID, IIIA1–IIIA2 — does constitute a true chronology, while the ordering of individual phases within those blocks does not hold. The transition relied on here, from IC–IIB to IIC–IID, is the best-supported boundary in the sequence at p = 0.98; the later boundary, from IIC–IID to IIIA1–IIIA2, is weaker at p = 0.62. Phase designations below therefore follow the excavators' attributions, but no chronological weight is placed on the ordering of individual phases. This timing coincides with the later phase of Maadi occupation — the Giza-adjacent settlement 15km south of the plateau — whose radiocarbon dates run from ca 3700/3600 to ca 3500 cal. BC (Hartung 2013, Paléorient 39(1)), so that the settlement's abandonment immediately precedes rather than overlaps the carving and Naqada material culture was spreading through the Giza corridor toward Buto. The Köhler-documented non-military absorption process is underway (Köhler 1995). Hartung likewise refers to 'Naqada groups emmigrating to the north' as a component of the acculturation between the Maadi and Naqada cultures (2013, p. 180 n. 1), so the northward population movement on which this framework depends is not an inference peculiar to the present paper. The population does not establish permanent settlement at Giza; the monument is a sacred territorial marker at the geographic midpoint between Hierakonpolis and Buto. The roughly 400-year interval between the Shemsu Hor's arrival at HK6, Hierakonpolis (~3800 BCE) and Phase 1 construction (~3400–3300 BCE) reflects northward travel time rather than delay: Köhler (1995) documents the expansion proceeding at an approximately 500-year pace from Naqada IIC (~3500 BCE) onwards. Giza lies approximately 700km north of Hierakonpolis along the Nile corridor. Phase 1 construction corresponds to the expanding population's arrival at the Giza plateau — the monument was built when the population reached this location, not from Hierakonpolis at a distance. Original form: a recumbent lion consistent with the Aker horizon-guardian tradition. Aker is physically attested from the 1st Dynasty under Hor Aha and Djer — a decorative palette from Djer's tomb at Abydos depicts Aker devouring three hearts (Kaplony, P. 1963, Die Inschriften der ägyptischen Frühzeit, Harrassowitz, Wiesbaden, p. 65). The same First Dynasty horizon is independently documented by de Wit, who records back-to-back double lions on amulets and on jar sealings from Naqada and Abydos, a form which 'affecte très exactement la forme du dieu Aker des textes plus tardifs' — corresponding exactly to the form of the god Aker in the later texts — citing Petrie, Royal Tombs I dyn. II, pl. 14 and 104, and Emery, Hor-Aha, pp. 88–89 and 112 (de Wit, C. 1951, Le rôle et le sens du lion dans l'Égypte ancienne, Brill, Leiden, p. 91; translations from the French are the author's). De Wit's 'période archaïque' denotes the Early Dynastic period, not the Predynastic. This predates the Pyramid Texts codification of his mythological role (Leitz, C. and Budde, D. 2002–2003, Lexikon der ägyptischen Götter und Götterbezeichnungen I–VII, Orientalia Lovaniensia Analecta 110–116 and 129, Peeters, Leuven); Reader notes that the New Kingdom texts providing our earliest securely dated references to the monument associate it with Horemakhet, 'Horus in the Horizon' (2026, p. 217), and observes that although the relationship between the sphinx and Ra is well established, 'there is currently no clear explanation for these links, or for other established associations such as the links with the foreign deities Hauron and Leto' (2026, p. 223). A leonine personification of the akhet is at least a candidate explanation for the first of those. Aker's 1st Dynasty physical attestation follows the proposed construction window by some two to three centuries rather than

coinciding with it, but precedes the textual codification by more than five centuries; and the fully described role in the Pyramid Texts of Teti (c. 2345 BCE) represents the same pattern of late textual codification of earlier-attested concepts documented across this series for other deities and institutional traditions. No inscription because the pre-writing period: Egyptian writing is not attested before approximately 3200–3100 BCE. The AHP transitional climate provides episodic high-energy rainfall during this period (Collins et al. 2017; Welc and Marks 2014), initiating compound weathering on the exposed limestone.

Phase 2: c. 3300–3100 BCE (Abandonment and erosion, pre-unification)

The population continues northward toward Buto. No institutional maintenance structure exists. The monument is known but unattended. AHP transitional rainfall continues compound erosion: runoff from the west, channelled by the pre-Khufu plateau catchment documented in Reader (2001a, 2026), affects the western and southern enclosure walls. The original head — lion form or modified yardang — begins to erode. By the Lower Egyptian–Naqada Transition at approximately 3350 BCE (Pennington et al. 2020), Naqada culture is demographically dominant throughout the Giza corridor.

Phase 3: c. 3100–2700 BCE (Early Dynastic, known but unattributed)

The unified Egyptian state encounters the monument. Writing now exists. The monument is ancient in living memory — across the span of this phase it has been present for between two and seven centuries without documented builders. At unification itself the interval is short: between proposed construction (c. 3400–3300 BCE) and unification (c. 3100 BCE) lie only 200–300 years, meaning the first literate Egyptians were separated from the monument's construction by approximately two centuries — well within living ancestral memory but before any administrative tradition existed to record it. Between unification (~3100 BCE) and the Fourth Dynasty (~2600 BCE), the monument would have undergone repeated burial and exposure cycles consistent with the geomorphological record. The flood and alluvial-fan record at the foot of the plateau documented by Butzer, Butzer and Love (2013) and Younes et al. (2024) indicates episodic burial and re-exposure across this interval, and the monument's recurring burial history — documented from the Dream Stele of Thutmose IV through Baraize's 1925–1936 excavation — confirms that a monument without institutional custodians would be sand-buried repeatedly within a generation of any clearance event. The Inventory Stele tradition may preserve a genuine memory that Khufu found the Sphinx already existing. The Aker iconographic tradition, fully described in the Pyramid Texts of Teti (c. 2345 BCE), identifies the eastern-horizon recumbent lion as a cosmic guardian concept already ancient enough to require textual appeasement. The monument is known, periodically encountered and re-buried, but without cult establishment: the characteristic signature of an inherited object without institutional custodians.

Phase 4: c. 2589–2532 BCE (4th Dynasty recarving and appropriation)

A Fourth Dynasty ruler — identity uncertain, though both Khafre and Khufu have been proposed by different scholars — encounters the ancient monument. The original head has been exposed for approximately 700–900 years of compound weathering and is significantly reduced and eroded. The nemes headdress is by this time established as the primary royal symbol (attested from Den, 1st Dynasty; standard from Khasekhemwy, late 2nd Dynasty). The ruler commissions the recarving of the degraded head into a royal nemes portrait. The recarving is from interior stone that survived the erosion — harder and fresher than the outer surfaces — producing a smaller head (Reader's differential: head less eroded because freshly carved) and a

disproportionate size ratio. The Sphinx Temple is begun using blocks from the deepened enclosure quarry (Lehner and Aigner geological fingerprinting, as documented in Lehner 1992). The temple program is abandoned mid-task (AERA documentation). No construction record is created because this was appropriation of an ancient monument, not an original commission.

Phase 5: c. 2532 BCE onward (Burial and multi-millennium rediscovery cycle)

The monument is gradually buried. No priesthood is established to maintain it. The burial cycle documented by Zivie-Coche (2002) begins: by approximately 1500 BCE the monument is buried to the neck. The Dream Stele of Thutmose IV (~1400 BCE) treats the Sphinx as a deity of remote antiquity, consistent with a monument built before institutional memory. In the New Kingdom the Sphinx is identified as Hor-em-akhet — Horus in the Horizon — a designation whose horizon-guardian function converges with Aker's oldest role, returning the monument, in cultural memory, to its original lion-guardian identity. Each culture that encounters it thereafter renames it according to their own framework, because no founding name survived the pre-writing construction period.

This sequence accounts for: the differential weathering (Reader); the absence of any Old Kingdom priesthood (AERA); the nemes as post-unification symbol (terminus post quem for the face); the Aker iconographic tradition as the conceptual framework for the original lion form; the matching quarry blocks (Lehner and Aigner); the abandoned temple (AERA); the pre-repair severe erosion (Lehner 1980); the Campbell's Tomb comparative erosion differential (Vandecruys 2006 — who introduces the Campbell's Tomb comparison but interprets the differential as consistent with conventional dating via groundwater seepage; Reader 2001a, 2026 — whose distributional runoff analysis documents why the groundwater model cannot account for the western wall concentration); the Inventory Stele tradition; and the multi-millennium burial cycle with no custodial continuity.

13. Integrated Framework

Drawing the evidence together, the following sequence is proposed as a coherent possibility model. No step requires evidence not already present in the peer-reviewed literature. No step claims the sequence is proven.

A population horizon associated with the Horus tradition — the Shemsu Hor, documented in six independent lines of evidence across Papers I–III of the Zep Tepi Series — is present in the Nile Valley from approximately 3800 BCE. This population's tradition spans both Hierakonpolis in Upper Egypt and Buto/Pe in Lower Egypt, placing it in the same geographic zone as Giza. Horus as worshipped specifically in the western Delta (Buto) takes a lion-headed form in religious iconography — consistent with a lion-bodied monument at Giza as an expression of this tradition. The population carried a lion-as-king iconographic system from the Upper Egyptian Naqada horizon into Lower Egypt as part of the documented northward cultural expansion. They had the subtractive carving capacity for a bedrock monument of the Sphinx's scale without requiring state-level construction apparatus — consistent with the Capacity Gap established in Phase Zero. The regional climate during 3800–3100 BCE was in the terminal AHP transitional phase, characterized by episodic high-energy rainfall alternating with drought — producing a compound non-linear erosion mechanism on any exposed limestone surface that reflects event intensity rather than linear time. The monument is therefore consistent with the observed erosion signature without requiring extreme antiquity. At or near the Predynastic-to-dynastic transition, a later ruler recarved the original lion-head into a human portrait (Section 8 documents the physical evidence: disproportionate 1:12 head-to-body ratio, divine beard

consistent with appropriation, and differential weathering between head and body). The monument was never formally attributed because its construction predated literacy; its original custodians dissolved into the consolidating state without leaving institutional continuity. Every subsequent culture renamed it — the naming trajectory is documented in Section 11.

One-line synthesis: the known facts about the Great Sphinx — its lion-headed Horus iconographic context, the absence of a construction record, the logistical inconsistency with simultaneous pyramid construction, the compound non-linear erosion signature, the disproportionate recarved head, the mid-task construction abandonment, the multi-millennium burial cycle, and the total absence of any founding name across every culture that encountered it — are individually anomalous for a Fourth Dynasty construction and collectively coherent in a Predynastic origin framework in which the monument was carved, inherited, partially modified, and ultimately forgotten by the civilization that built around it. There is a further dimension to this connection that has not previously been noted. The Sphinx body is carved from Giza Member II limestone — the local Mokattam Formation nummulitic limestone, the same material that produced the enclosure walls' deep erosion crevices under terminal AHP rainfall. If the Shemsu Hor or their institutional successors observed this erosion over the seven to nine centuries between the Sphinx's construction and the pyramid program, they had direct empirical evidence of a specific material failure: local Giza limestone degrades rapidly under water exposure. When the Great Pyramid was built, the builders used two distinct materials in a way that reflects precisely this knowledge. The core blocks are local Giza limestone — the same Member II material as the Sphinx body, quarried from the plateau in bulk and placed in the protected interior where water exposure is minimal. The outer casing stones were Tura limestone: harder, finer-grained, and less porous than the Setepet Member (Member II) of the Giza Mokattam Formation from which the Sphinx body is carved — a distinction established in Gauri's geological study of the Sphinx members (K.L. Gauri, Geoarchaeology, 1995; Aly et al. 2014, YOCOCU proceedings, on differential decay in Mokattam formation limestone). The casing stone origin is documented in Romer (2007, The Great Pyramid: Ancient Egypt Revisited, Cambridge University Press), with transport from the Tura quarries specifically recorded in the Diary of Merer. The conventional explanation for choosing Tura is aesthetic — it is whiter and polishes finer. But aesthetic and material durability are not mutually exclusive: the builders placed their most weather-resistant available limestone precisely on the outer surfaces, the surfaces exposed to rain, wind, and temperature cycling. The same surfaces that had visibly failed on the monument already standing at the site. One possible — and currently untestable — implication is worth stating explicitly: the Sphinx may not only be the first monument at Giza. It may be the reason the outer shell of the last ones is still standing. No ancient source documents this causal link, and the conventional explanation for Tura casing stone — its whiteness, polish, and fine texture — is independently documented. This remains a speculative synthesis, not a demonstrated conclusion.

14. The Monument Itself: Orientation, Measurement, and Wedjat Encoding

The preceding sections have argued from anomaly and framework. This section examines the monument's physical dimensions and orientation for internal mathematical structure. The analysis is grounded in three peer-reviewed sources: Lehner (1992, 'Reconstructing the Sphinx,' Cambridge Archaeological Journal 2(1), 3–26, the peer-reviewed publication of the five-year ARCE field survey); Nell and Ruggles (2014, Journal for the History of Astronomy 45(3): 304–360, DOI: 10.1177/0021828614533065, precision Total Station survey of the Giza plateau); and Rossi (2004, Architecture and Mathematics in Ancient Egypt, Cambridge University Press,

on Egyptian architectural proportional systems). Three convergences are identified, each presented as a hypothesis requiring further investigation.

The Primary Orientation: 90° = Wedjat 1/4 — Confirmed as Intentional by AERA

The Sphinx faces approximately 90° due east — the spring and autumn equinox sunrise direction. This is not merely an external observation: AERA's own Sphinx Mapping Project documentation states explicitly that "a line can be drawn from the Sphinx Temple's east-west axis through an enigmatic box along the right side of the Sphinx. The line continues to the apparent south side of Khafre's pyramid as it appears on the horizon when viewed from the Sphinx Temple. Twice a year, on the equinoxes, the sun sets on this alignment and would have illuminated the Sphinx Temple sanctuary and cult statue if the builders had finished the temple interior" (AERA, aeraweb.org/mapping-the-sphinx/, 'Mapping the Sphinx'). The equinox orientation is documented by the primary research institution as the Sphinx complex's intended solar function — and the temple was never completed because it was abandoned before the interior was finished. Smithsonian Magazine cites Lehner directly: at the equinox "the shadow of the Sphinx and the shadow of the pyramid, both symbols of the king, become merged silhouettes" — a deliberately designed solar event.

In the Wedjat framework of Paper II (Levy 2026), 90° / 360° = 1/4: the equinoctial orientation family. Belmonte, Shaltout and Fekri (2009, 'Astronomy, Landscape and Symbolism: A Study of the Orientation of Ancient Egyptian Temples,' in Belmonte and Shaltout (eds.), 'In Search of Cosmic Order: Selected Essays on Egyptian Archaeoastronomy', Supreme Council of Antiquities Press, Cairo, pp. 211–272), measuring the orientations of approximately 330 temples throughout Egypt — a sample the authors state contains 'data of more than 95% of all the temples to be found nowadays in Egypt, and is without doubt statistically representative' (2008, p. 184), found east-facing orientation to be the dominant tradition: the near-due-east peak is statistically significant at the 99 per cent confidence level, appears 'in the earliest periods and predominantly in Lower Egypt', and is 'mostly related to the pyramid complexes of the Old and Middle Kingdom' (2008, pp. 184, 200). The authors themselves decline the equinoctial reading of that peak: Family I 'never works suitably as "equinoctial"… and so, from now on, we will simply call it the eastern (cardinal) family', its declination values fitting 'neither the astronomical equinox nor the mid-day between the solstices', and they state expressly that their use of the term does not mean 'that we are attributing knowledge of the astronomical equinox… to the ancient Egyptians but rather that we believe that such an orientation would be a proof of a certain interest in the four cardinal directions' (2008, p. 200 and n. 12). What the survey establishes, therefore, is that a due-east cardinal orientation was the dominant early Lower Egyptian tradition — which is the tradition the Sphinx's axis belongs to — not that the Egyptians tracked the astronomical equinox. The Sphinx participates in this tradition. The equinoctial orientation was not a secondary feature at Giza — it was potentially the primary one across the plateau, as Nell and Ruggles (2014) document from their Total Station survey.

The Complementary Orientation Pair: Pyramids North + Sphinx East = Complete Wedjat System

The three pyramids are oriented to 0° north — the circumpolar/Meskhetyu tradition documented in Phase Zero of this series. The Sphinx faces 90° east — the equinoctial Wedjat 1/4. Together, 0° and 90° are the two primary Wedjat orientations, placed on one plateau 90° apart. No other ancient monument complex in Egypt places both primary Wedjat orientations on a single site at this scale. Whether the Sphinx and pyramids were designed simultaneously or whether the

pyramids were positioned relative to an existing equinoctial monument, the result is the same: the complete Wedjat orientation pair encoded at Giza.

The Night Sky of the Integration Sequence: Archaeoastronomical Profile of 3800 –3100 BCE

The preceding subsections establish the Sphinx's equinoctial orientation and its connection to the Meskhetyu north-orientation tradition. This subsection examines the sky above Giza across the corridor integration sequence and asks whether the celestial configuration is consistent with the hypothesis. Positions are reported at 3800, 3500, 3300 and 3100 BCE so that the trend across the sequence is visible; the epoch bearing on construction is c. 3400–3300 BCE, so it is the 3500 and 3300 values that bracket the construction estimate. Star positions were calculated for the Giza Plateau (29.97°N, 31.14°E) at key astronomical moments across 3800–3100 BCE. Positions are computed from Hipparcos catalogue coordinates with proper motion applied over the interval, precessed using the long-term precession model of Vondrák, Capitaine and Wallace (2011), which is valid across ±200,000 years, rather than a short-span polynomial model. Three independent findings are presented.

Leo and Regulus at the winter solstice midnight. On the longest night of the year — when sustained astronomical observation was most practical — the constellation Leo, with its primary star Regulus (α Leonis), reached its highest point in the southern sky near local midnight throughout the proposed construction window. At meridian transit from Giza, Regulus reached altitudes of 82.70° (3800 BCE), 83.26° (3500 BCE), 83.56° (3300 BCE) and 83.80° (3100 BCE), placing it within 7.3° of the zenith across the entire window and within 7° from 3500 BCE onward. The corresponding altitude at 2570 BCE is 84.17°: a difference of approximately 1.5° over 1,230 years. The near-zenith Leo alignment at winter solstice midnight is thus astronomically indistinguishable between the Shemsu Hor window and the Fourth Dynasty. A population building a lion monument at Giza between 3800 and 3100 BCE would have observed the celestial lion passing almost directly overhead on the longest nights of the year. This alignment cannot be used to discriminate between the two epochs on astronomical grounds alone, and claims that it supports a specifically Fourth Dynasty date are not borne out by the calculated data.

Thuban as pole star: an epoch-specific signature. Unlike the Leo alignment, which remained stable across more than a millennium, the north celestial pole offers a discriminating astronomical signature. Due to axial precession — Earth's axial wobble, with a current period of approximately 25,772 years — different stars occupy the polar position in different epochs. During the proposed Shemsu Hor window, the star Thuban (α Draconis) was the closest visible star to the north celestial pole: at 5.66° of polar distance in 3800 BCE, tightening continuously through 3.97° in 3500 BCE and 2.84° in 3300 BCE to 1.71° by 3100 BCE, and reaching its minimum of 0.10° in approximately 2797 BCE, immediately after the window's close. Throughout this same period, Polaris (α Ursae Minoris) stood between 31.1° and 27.9° from the pole, and was still 25.3° away at 2570 BCE — functionally useless as a directional reference. Thuban was the unambiguous pole star of this epoch. Any north-oriented construction at Giza during 3800–3100 BCE necessarily referenced Thuban and the constellation Draco in which it sits. The precision of Thuban's alignment increased continuously across the window: builders arriving at Giza in 3800 BCE found Thuban already serviceable; by 3100 BCE it was within 2° of true north and tightening toward its historical maximum. The north-facing shaft of the King's Chamber in the Great Pyramid has been identified as directed toward Thuban (Badawy, A. 1964, 'The stellar destiny of pharaoh and the so-called air shafts in Cheops pyramid', Mitteilungen des Instituts für Orientforschung 10, 189–206; Trimble, V. 1964, 'Astronomical

investigations concerning the so-called air shafts of Cheops pyramid', same volume, 183–187), carrying this same observational tradition forward into the Dynastic record. Badawy and Trimble read the shafts as symbolic conduits for the king's ascent rather than as observational sight-lines, and the identification has been criticised on the grounds that the shafts are horizontal at their inner ends and that the Queen's Chamber shafts do not reach the exterior. Spence (2000, Nature 408: 320–324) addresses a separate question, the orientation of the pyramid sides by the simultaneous transit of Kochab and Mizar; her method was contested on chronological grounds by Rawlins and Pickering (2001, Nature 412: 699–700).

The Nabta Playa connection: artefact evidence for the same population and the same pole star. The Thuban signature is not an isolated calculation: it has a documented physical correlate within the corridor. Malville, Wendorf, Mazar and Schild (1998, *Nature* 392(6675):488–491, doi 10.1038/33131) report that the Nabta Playa complex — Corridor Node 6 in this series' framework, built by cattle-herding pastoralists at 22.5°N — exhibits the repetitive orientation of megaliths, human burials, and cattle burials toward the northern sky, and that the site's calendar circle contains two internal sightlines: one toward the summer solstice sunrise and one toward the north. The complex dates to approximately 4800–3400 BCE, with final abandonment as intensifying aridity drove the pastoral population into the Nile Valley — the migration the Corridor III population model documents as the Shemsu Hor northward movement. During 4800 –3400 BCE, the north that those megaliths faced was marked by Thuban. The same population that encoded north-sky orientation at Nabta Playa during the Thuban era arrived at Giza during the proposed construction window as Thuban was tightening toward peak precision. On this hypothesis, the Sphinx's east-facing equinoctial orientation and the north-facing tradition this population had practised at Nabta Playa together constitute the complete Wedjat orientation pair encoded at Giza: the pastoral population that oriented monuments toward the northern sky for a millennium brought both astronomical traditions to the same plateau.

The Meskhetyu framework and the Gerzeh Palette. During the Shemsu Hor window, the Meskhetyu — the Bull's Thigh, Ursa Major — circled permanently around Thuban at Giza's latitude, never setting. As documented above, the Meskhetyu is the pre-eminent north-orientation reference in Egyptian astronomical tradition, identified by Belmonte, Shaltout and Fekri as the first of the 'three, and only three, kinds of "targets"' present in Egyptian astronomical orientation throughout her history — a meridian orientation 'probably realized by use of stars of Meskhetyu', a target of 'markedly solar character', and the two brightest stars Sirius and Canopus (2008, 'On the Orientation of Ancient Egyptian Temples: (4) Epilogue in Serabit el Khadim and Overview', Journal for the History of Astronomy 39: 181–211, at p. 206). The sky of the proposed construction window therefore presented a coherent dual-axis framework: the Meskhetyu permanently occupying the northern sky and circling Thuban at the pole, while Leo dominated the winter midnight zenith to the south at near-zenith altitude from Giza. The two dominant iconographic animals of the Shemsu Hor tradition — the bull and the lion, documented across the highland corridor in Papers I–III of this series — were simultaneously the dominant celestial figures of the night sky during the proposed construction window. The monument on the ground, a lion facing east, was built under a sky in which the lion marked the southern zenith and the bull marked the northern axis. Corroborating this framework at the artefact level, the Gerzeh Palette (Naqada IIC-D, c. 3500–3200 BCE; Cairo Museum CG 34173 / JE 43103) — produced by the Naqada II population during the proposed construction window — depicts a bovine head associated with the Hathor or Bat cow deity, with five stars positioned at the horns, crown, and ears of the figure. In Egyptian astronomical tradition, Hathor's celestial identity is associated with the Taurus and Pleiades region, and the decan Khau is identified with the Pleiades by most researchers in the field. Lull and Belmonte, working from two independent methods — heliacal rising phenomena and the decan list of the tomb of

Senenmut — converge on that identification, recording agreement on most of the decans between Sopdet and Khau, which they identify with Sirius and the Pleiades respectively (2009, pp. 157–194). Whether the five stars encode a specific asterism has not been formally established in the archaeoastronomical literature and is not claimed here. What the artefact demonstrates is that the Naqada II population was encoding bovine-celestial imagery during the exact epoch in which the Meskhetyu dominated the north sky and the vernal equinox occurred in the Taurus region — the direction the Sphinx faces. This is among the earliest known Egyptian artefacts linking bovine deity iconography directly to stellar bodies. A formal archaeoastronomical analysis of the Hierakonpolis ceremonial structures, particularly HK29A (c. 3800–3600 BCE), does not appear in the published literature; on the Sphinx Hypothesis, such an analysis would constitute a directly testable prediction, and its absence is noted as a documented research gap.

The calculations reported in this subsection are reproducible from a deposited script, astronomy_verification.py, which derives every figure above from Hipparcos catalogue coordinates with proper motion applied, precessed by the Vondrák, Capitaine and Wallace (2011) long-term model as implemented in ERFA, and prints the computed values against those published here. It carries two internal sanity checks: a J2000 round-trip against catalogue positions, and an independent search for Thuban's polar minimum. Python 3.8+ and astropy are required. The script is deposited with this paper for independent replication (Zenodo DOI: 10.5281/zenodo.21443643).

Summary

The monument encodes: (1) the equinoctial orientation (Wedjat 1/4, 90° east) confirmed by AERA as the intended solar function of the Sphinx Temple; (2) a body length of 140 royal cubits (73.5m ÷ 0.524m/cubit = 140.3, confirmed by Lehner's 1991 survey of the current weathered state; Lehner 1991, Zenodo DOI 10.5281/zenodo.1203621). All Lehner measurements reflect the post-weathering condition. Length is the most stable dimension; horizontal erosion loss over 73.5m is negligible. Height and width are more affected by surface erosion; the original body was likely taller than the current 20m. The 140-cubit total length likely reflects the intended design, as weathering loss along the length axis is well within the rounding to a round-number cubit count. The forepaws extend approximately 26m beyond the natural rock formation (Lehner 1991, Archaeology of an Image: The Great Sphinx of Giza, Zenodo DOI: 10.5281/zenodo.1203621; ARCE Sphinx Mapping Project Archive, aeraweb.org); the carved natural body is therefore approximately 47.5m = 90.6 cubits ≈ 90 cubits. The face looks 90° east; the natural rock body measures approximately 90 cubits. Whether this constitutes a second encoding of the 1/4 Wedjat fraction in linear dimension rather than angular orientation requires more precise survey data to confirm. The 140-cubit total also expresses a precise 1:2 ratio with the Great Pyramid's canonical height of 280 cubits (Rossi 2004; Petrie 1883). This ratio is the Wedjat 1/4 → 1/2 step: the Sphinx encodes Wedjat 1/4 in orientation (90° east) and in dimension (140 cubits = 1/4 × 560); the Pyramids encode Wedjat 1/2 in orientation (0° north = meridian) and in dimension (280 cubits = 1/2 × 560). The number 560 = 140 × 4 = 280 × 2 is the common base unit. Both monuments encode different fractions of the same underlying number, once in angular orientation and once in linear dimension. Whether Predynastic or contemporaneous with the pyramids, the Sphinx was not placed or proportioned arbitrarily. It was the equinoctial anchor of a system that together with the north-facing pyramids encodes the complete Wedjat 1/4 and 1/2 pair at Giza — the pair documented across the Zep Tepi Series — expressed simultaneously in both orientation and dimension.

15. The Convergence: Eight Threads, One Monument

This paper does not argue from eight independent disciplines pointing at the same conclusion. It documents one continuous history — the African Humid Period from onset to termination — each discipline illuminating the segment of that history its methodology can reach.

The AHP begins. The Sahara becomes green. Corridors of life open across what is now desert. This is Zep Tepi — the First Time. This is Mehet-Weret — the Great Flood that gave life to the world the Shemsu Hor inhabited. Cauville closes her study of the Edfu hymn with a list of passages showing graphic confusion between Mehyt and Mehenet in the Ptolemaic temple texts themselves (1982, p. 125), and the hymn addresses the goddess as 'Ô Mehyt, Mehenet, rejoins ta maison' (p. 108). Confusion between similarly named goddesses is therefore attested in the ancient sources and is not merely a modern error, which is reason to state such distinctions explicitly rather than rely on names alone. The two names are kept distinct throughout what follows: Mehet-Weret (mht-wrt) is the cow goddess of the primordial flood, Mehit (mhyt) the lioness. The claim advanced here is not that they are one deity, but that both names derive from the root mh and that the flood theology attaching to the one may illuminate the naming of a monument attributed to the other. That is an argument, not an identification. The corridor populations develop along the seven documented nodes: their astronomical knowledge, their lion iconography, their therianthropic traditions.

The AHP collapses. Zep Tepi ends. The same waters that gave life become episodic devastating floods. The Shemsu Hor are driven into the Nile Valley, integrating at Hierakonpolis and spreading northward toward Buto. Passing through the geographic midpoint of their documented corridor — the Giza plateau — they are the most parsimonious candidate population for the monument carved from the limestone bedrock that stands there, on this hypothesis. They may have named it Mehit, after the great flood that created and was now destroying their world. She who restores the Wedjat. The cosmic order.

The terminal AHP's aftershocks — episodic high-energy rainfall events, the death throes of the same phenomenon the monument is named after — erode it quickly. The western enclosure walls, exposed to runoff from the plateau before Khufu's later quarrying creates a barrier, take the deepest damage. The monument bears the erosion of its own name.

The Shemsu Hor move northward. Their institutional structure dissolves into the consolidating Egyptian state. The monument is left without custodians. No priesthood. No maintenance. It begins its burial cycle. Later, a Fourth Dynasty ruler finds it — ancient, eroded, nameless in the administrative record because its name predates writing. On this hypothesis, he recarves the weathered head into his own nemes portrait, builds a temple, and abandons it mid-task — leaving no inscription because the monument was inherited, not constructed.

The monument is buried and rediscovered across three millennia. Every culture renames it because no founding name survived in the historical record. But the name had survived — embedded in the titles of Khufu's own officials, in the Pyramid Texts, in the Book of the Dead. Spell 17 identifies Mehet-Weret with the Wedjat — a New Kingdom text, and a statement about the cow goddess rather than the lioness. The monument faces the Wedjat orientation. On this hypothesis, the name, the flood, and the cosmic order are one.

What follows is not a convergence argument. It is a documentation of this single continuous thread from eight disciplinary angles. The geological evidence sees the terminal AHP erosion. The palaeoclimate evidence sees the rainfall regime. The archaeological evidence sees the population and their capacity. The Egyptological evidence sees the institutional absence. The archaeoastronomical evidence sees the orientation. The philological evidence sees the name.

Each discipline captures a different segment of the same story. The convergence may not be coincidence. On this hypothesis, it is continuity.

A clarification of the flood sequence is necessary here. On the reading advanced here, the African Humid Period is what the Mehet-Weret tradition remembers — the Great Flood, the primordial water from which the world was created. Its onset was the life-giving flood that enabled the Green Sahara and the corridor civilisation the Shemsu Hor built along it. That is Zep Tepi: the Great Flood as genesis. Its termination was the episodic high-energy rainfall that drove the Shemsu Hor into the Nile Valley and — on this hypothesis — eroded the monument they most parsimoniously built at Giza. That is the same flood as destruction. One phenomenon, two phases, one name. On this hypothesis both meanings are held together in the naming: she who creates and she who destroys; she who floods and she who restores. Whether the Egyptians themselves understood the name that way is not demonstrated by the evidence assembled here. The monument stands at the precise geographic and temporal point where those two phases meet. Its name is not incidental. On this hypothesis, it encodes the entire cycle — creation, destruction, and restoration held simultaneously in one word.

A structural parallel is noted here, offered as a hypothesis for the reader's evaluation rather than as a demonstrated claim. The terminal African Humid Period — episodic high-energy rainfall alternating with intensifying heat and aridity — is structurally consistent with what Wilkinson R.H. (2003) and Pinch (2002) document as the dual nature of the Eye of Ra: a force that simultaneously brings moisture (the Eye as the star Sothis, heralding the Nile inundation) and solar destruction (the Eye as Sekhmet, the lioness whose breath was the hot desert wind). Guilhou's study of the Myth of the Heavenly Cow supplies the seasonal mechanism behind that duality. Hathor's deadly assault on humanity, she notes, can be read as a mythical explanation of the uncompromising heat and contagion of summer, which falls at the end of the Egyptian year; the five epagomenal days were feared as a period of danger and misfortune, and the danger was held to have passed at the moment the Nile began to flood, commencing a new year and a new agricultural cycle. The red beer that appeases the goddess can then be read as a reference to the red silt of the first inundation waters (2010, p. 4). Whether the corridor populations who built their civilisation during the AHP and were driven from it by its collapse consciously encoded this duality in the monument's name cannot be demonstrated from available evidence. What the philological and palaeoclimate records independently establish is that the name Mehit carries both meanings, and the monument stands at the point where both phases of that force converged.

16. The Qualitative Consilience Argument

The convergence of the 8 disciplinary lines documented in Sections 1–14 has greater explanatory power than the conventional Khafre model. The conventional model explains 4 of 12 documented anomalies without special pleading (proximity to Khafre's complex, architectural unity with the mortuary temple, matching quarry blocks, equinox shadow alignment); for the remaining 8 anomalies it requires an ad-hoc special explanation specific to each one — absent Old Kingdom priesthood, abandoned temple, non-uniform western wall erosion, recarved head, multi-millennium burial cycle, the Wepemnefret title naming Mehit in Khufu's own court, the 'Wedjat restoration' etymology, and the cultural transmission of lion iconography. The Predynastic model, by contrast, explains all 12 of 12 anomalies as the expected signature of a single continuous history: a corridor population arriving in the terminal AHP, carving a lioness monument facing the equinoctial sunrise, leaving no institutional apparatus when the horizon dissolved, and having the monument inherited, partially modified, and ultimately forgotten by the civilization that built around it. No anomaly requires a special explanation. The model with 8 ad-

hoc patches is explanatorily weaker than the model with zero. This twelve-anomaly tally is stated at its strongest here and is discounted below: several of the twelve tell against the Khafre attribution rather than for a Predynastic date, and two rest on this paper's own interpretation, so the figure defended is seven to eight genuinely discriminating anomalies rather than twelve. This is the qualitative form of Whewell's consilience: when independent lines of evidence from different domains converge on a single explanation, and when that explanation accommodates all the observed phenomena without requiring special moves for any of them, the explanatory power of the convergence itself constitutes the inferential warrant — independent of the strength of any individual line.

For comparison, the conventional Fourth Dynasty model requires separate explanations for each of the following observations that the pre-dynastic model accommodates without additional assumptions: (1) absence of an Old Kingdom Sphinx priesthood; (2) the Sphinx Temple abandoned mid-construction with debris uncleared; (3) non-uniform western wall erosion inconsistent with haloclasty alone; (4) the disproportionately small head (1:12 ratio); (5) the multi-millennium burial cycle with no custodial continuity; (6) the Wepemnefret title naming Mehit in Khufu's own court; (7) the name Mehit meaning 'she who restores the Wedjat' for an equinoctially oriented monument; (8) the Naqada lion-king tradition arriving in Lower Egypt before the Fourth Dynasty. The pre-dynastic model accommodates all eight as expected outcomes of a single continuous history. The reader is invited to assess which model offers the more parsimonious account.

Whewell (1840) formalised this principle as the consilience of inductions; Wilson (1998) revived it in modern philosophy of science. The qualitative consilience does not depend on assigning numerical probabilities to any individual anomaly — it rests on the observation that a single unified explanation accounts for all of them while the alternative requires a separate special explanation for each. The reader is invited to assess whether the eight-special-explanations model or the zero-special-explanations model is the more parsimonious account of the documented record.

Four qualifications should be entered against that tally, since a scoring exercise of this kind is only as strong as its weakest row. First, not every listed anomaly discriminates equally. The absent Old Kingdom priesthood, the temple abandoned mid-construction and the non-uniform western wall erosion are independently documented observations for which the conventional model has no straightforward account; these carry the argument. The equinoctial orientation, by contrast, is scored as directly accommodated by every model in the comparison and therefore discriminates between none of them. Second, several anomalies — the recarved head, the burial cycle, and the arrival of the Naqada lion-king tradition — are accommodated equally well by any model placing the monument earlier than the Fourth Dynasty, and so tell against the Khafre attribution specifically rather than in favour of a Predynastic date. Third, two of the twelve depend on this paper's own interpretation rather than on an independent datum. The Wepemnefret title is a real attestation, but it constitutes an anomaly for the conventional model only if Mehit is already accepted as relevant to the monument; and the 'Wedjat restoration' etymology is an interpretation advanced here, on a name whose derivation is contested in the literature. Requiring a rival model to account for either is question-begging, and they should be discounted from the tally. Fourth, Reader's pre-Fourth-Dynasty model — the most credible rival to the account offered here — appears in the comparative table of Section 17 but not in the twelve-anomaly scoring, which sets the Predynastic model against Khafre, Khufu and a late Naqada III local elite. On the anomalies that matter most, Reader's model performs comparably. Discounted accordingly, the honest claim is not twelve against zero but something closer to seven or eight genuinely discriminating anomalies on which the Predynastic account requires no

special pleading and the Fourth Dynasty attribution does. That is a weaker claim than the one the table states, and it is the one this paper defends.

17. Discussion: What This Hypothesis Claims and Does Not Claim

Comparative Model Analysis

Criterion
4th Dynasty (Khafre)
Reader Pre-4th Dyn.
Schoch 7000–9000 BCE
Predynastic Shemsu Hor
No Old Kingdom priesthood
Anomalous — only Giza monument without documented cult
Anomalous, unexplained
No engagement
Expected — no institutional custodians survived
Unfinished temple, debris uncleared
Unexplained for primary monument
Anomalous but unexplained
No engagement
Expected — capacity limit reached at pre-state/state threshold
Non-uniform weathering (western wall disproportionate)
Unexplained — haloclasty predicts uniform damage
Explained — pre-Khufu runoff (Reader 2001a)
Partially explained
Explained — pre-Khufu western runoff catchment
No builder inscription
Anomalous for primary monument
Expected — pre-state
Expected — pre-writing
Expected — pre-writing + no institutional successor to inscribe later
Face attribution disputed among Egyptologists
Internally anomalous — Khafre and Khufu both proposed; no consensus
Not directly engaged
Not engaged
Explained — dynastic recarving; appropriation leaves no inscription
Multi-millennium burial, no maintenance
Sand/geography, unexplained
Partially explained
Explained by extreme age
Expected — no custodians survived transition
Equinoctial orientation
Conventional, not predicted
Not engaged
Not engaged
Predicted by framework; attested at Nabta Playa (Nature 392, 1998)
Positive cultural attribution
Yes — Khafre / 4th Dynasty
No — geology only
No — no archaeological population
Yes — Shemsu Hor, documented corridor population
Near-Giza paleoclimate proxy
No engagement
Partial (runoff geometry)
No engagement
Yes — Lake Hamra + Bernhardt et al. 2012
Criteria satisfied
2–3 of 9

4–5 of 9
3–4 of 9
8–9 of 9

The nine criteria scored above are those listed in this table and are not the same set as the twelve anomalies enumerated in the consilience argument preceding it; two of the nine — positive cultural attribution and near-Giza palaeoclimate proxy — record what a model supplies rather than an anomaly it explains. The two tallies are therefore not convertible into one another, and neither should be read as the paper's headline claim: that claim is the discounted figure of seven to eight genuinely discriminating anomalies stated immediately above. This paper does not claim the Sphinx was definitively constructed during 3800–3100 BCE. It proposes that the known evidentiary record is more coherently accommodated by a Predynastic origin framework than by the conventional Fourth Dynasty attribution. This claim requires transparency about its logical structure. The argument proceeds through a dependency hierarchy, not parallel independent supports. First: the erosion evidence expands the plausible chronological range beyond the Old Kingdom, but does not uniquely establish a date. Second: if the chronological range is expanded, then the absence of Old Kingdom attribution becomes less anomalous and the cultural context of the 3800–3100 BCE window becomes relevant. Third: if the cultural context is relevant, then the Shemsu Hor framework and its associated iconographic and architectural traditions become a plausible candidate framework. No single step proves the conclusion; each step expands what the evidence allows. The comparative model table is a heuristic comparison, not a quantitative proof. Scoring reflects whether the anomaly is accommodated by the model — meaning the anomaly is expected under that model without requiring special explanation — not whether the model uniquely predicts it. A model that accommodates more anomalies is more parsimonious than models requiring multiple independent special explanations; it is not necessarily correct.

Two significant alternative explanations have been proposed in the scholarly literature and deserve direct engagement. First, Stadelmann attributes the Sphinx to Khufu rather than Khafre on the basis of facial iconography and stylistic dating (1998, in Grimal (ed.), Les critères de datation stylistiques à l'Ancien Empire, BdE 120: 353–387; argued directly in 1999, 'Le grand Sphinx de Giza, chef-d'œuvre du règne de Chéops', CRAIBL 143(3): 863–879). This Khufu attribution faces identical institutional anomalies as the Khafre model: the same absent Old Kingdom priesthood, the same unfinished temple, the same pre-Khufu weathering evidence Reader documents, and the same absence of any administrative record. It explains 2–3 of 9 anomalies in the comparative model table. Second, Reader (2001a, Archaeometry 43(1): 149–165; and 2026, Rewriting the History of the Great Sphinx, Archaeopress, ISBN 978-1-805-83209-6) argues from geological evidence that the Sphinx was constructed in the earliest stages of the Pharaonic Era, before Egypt's first pyramids. He further states that rainfall run-off is 'an erosive agent which is known to have been experienced at Giza until the late Fifth Dynasty' (Reader 2020, Proceedings of the Fourth British Egyptology Congress), placing the run-off regime across a considerably longer interval than a single climatic episode. Reader himself also proposes Mehit for the recumbent lion on one of the wooden panels from the Third Dynasty tomb of Hesy-Ra at Saqqara, tomb S 2405, identifying it by the vertical crooked feature rising from the animal's back and the position of the tail (2026, p. 222, figure 13.5, citing Reader 2014, Journal of Egyptian Archaeology 100, p. 430). The panel is Cairo, Egyptian Museum, CG 1427 (Porter and Moss (1960–2007), Topographical Bibliography III.2, 439). Reader's 2026 peer-reviewed monograph — the most credible sustained account of pre-Fourth-Dynasty construction to date — concludes the geological evidence for an older Sphinx is robust, and specifically notes Maadi culture presence at Giza at approximately 3500 BCE. The Predynastic Shemsu Hor framework proposed here extends Reader's geological conclusion rather than contradicting it: Reader establishes that the monument predates the pyramids; this paper

proposes the cultural population, iconographic context, and paleoclimate mechanism for that pre-pyramid construction. A third hypothetical alternative — a late Predynastic local Naqada III elite unrelated to the Shemsu Hor corridor population (~3200–3100 BCE) — lacks textual or material support at Giza and faces the same weathering constraint as the First Dynasty models: insufficient time before Khufu's quarrying barrier for the compound erosion Reader documents under the proposed high-variance AHP precipitation regime.

The following table uses two scoring categories. Direct: the anomaly is accommodated by the model without requiring assumptions external to its core commitments. Ad-hoc: an additional assumption specific to that anomaly is required. The reader is invited to re-score the table with their own assessment. The four-way discriminability test: scoring each candidate against the 12 documented anomalies. 'Direct' indicates the anomaly is accommodated by the model without requiring an ad-hoc special explanation. 'Ad-hoc' indicates the model requires a special explanation specific to that anomaly. 'Insensitive' indicates the model does not address the anomaly (it could be either direct or ad-hoc depending on additional evidence).

Anomaly

Khafre

Khufu (Stadelmann)

Late Naqada III local elite

Predynastic Shemsu Hor

Absent Old Kingdom priesthood

Ad-hoc (Khafre didn't establish one)

Ad-hoc (same)

Ad-hoc (transition period)

Direct (no institutional custodians)

Abandoned temple mid-construction

Ad-hoc (Khafre ran out of resources)

Ad-hoc (same)

Ad-hoc (could fit)

Direct (secondary program deprioritised)

Non-uniform western wall erosion

Ad-hoc (haloclasty alone)

Ad-hoc (same)

Direct if pre-Khufu, but insufficient time under high-variance AHP

Direct (pre-Khufu directional runoff)

Recarved head (1:12 ratio)

Ad-hoc (original Fourth Dynasty proportions)

Ad-hoc (same)

Direct (later recarving)

Direct (carved from interior stone that survived original erosion)

Multi-millennium burial cycle

Ad-hoc (local geomorphology unique to this monument)

Ad-hoc (same)

Direct (early monument)

Direct (no institutional maintenance)

Wepemnefret title (Mehit by name)

Ad-hoc (late retrospective)

Ad-hoc (same)

Ad-hoc (no First Dynasty attestation)

Direct (Mehit by name confirmed in mainstream Egyptology via Smith 1963 and Der Manuelian 2003, with independent cult-geography and mythological attestations)

'Wedjat restoration' name (Mehit / mḥ / Wedjat)

Ad-hoc (coincidence of meaning)

Ad-hoc (same)

Ad-hoc (no First Dynasty record)

Direct (etymology from mḥ → mouḥ → Wedjat-restoration semantic)

Cultural lion-king transmission

Ad-hoc (independent parallel invention)

Ad-hoc (same)

Direct (Naqada elite tradition)

Direct (documented Naqada northward expansion)

Equinoctial orientation (Wedjat 1/4)

Direct (AERA sunset alignment)

Direct (same)

Direct (equinoctial tradition)

Direct (Wedjat 1/4 framework)

Proximity to Khafre's complex

Direct (spatial)

Ad-hoc (no documented Khufu ‘Sphinx complex’)

Ad-hoc (no First Dynasty record)

Direct (Fourth Dynasty integration of inherited structure)

Architectural unity with mortuary temple

Direct (master plan)

Ad-hoc (Khufu attribution contested)

Insensitive

Direct (Khafre's builders coordinated with inherited structure)

Matching quarry blocks (Lehner-Aigner)

Direct (unified quarry program)

Direct (same)

Insensitive

Direct (Fourth Dynasty deepening of pre-existing enclosure)

Total direct / ad-hoc

4 direct / 8 ad-hoc

2 direct / 9 ad-hoc

0–2 direct / 6–8 ad-hoc

12 direct / 0 ad-hoc as scored; see §16 for four qualifications reducing this to c. 7–8 genuinely discriminating anomalies

Equifinality Matrix: Discriminating Evidence

The four-way scoring table above documents which anomalies each model accommodates directly and which require ad-hoc special explanations. That structure shows explanatory parsimony. The matrix below asks a different question for the three primary discriminating anomalies: for each class of evidence, what does each model predict, where does it face evidential problems, and — most importantly — what specific finding would decide between them? The purpose is to convert the parsimony argument into a set of testable discriminators that a reviewer from any discipline can evaluate against the evidence in their own field.

Anomaly

Khafre / 4th Dynasty

Reader (pre-4th Dyn.)

Predynastic Shemsu Hor

Discriminating evidence

Absent Old Kingdom priesthood (the Sphinx is the only Giza monument without documented cult)

Requires ad-hoc: Khafre deliberately chose not to establish a cult for his primary monument. No parallel in his documented mortuary program.

Partially explained: an early monument with no custodians would lack institutional continuity. Does not explain why Fourth Dynasty builders failed to establish a cult for an inherited monument they were actively completing.

Directly predicted: the Shemsu Hor horizon dissolved into the consolidating state; no institutional custodians survived the transition to create and maintain a priesthood.

A single Old Kingdom priestly title referencing the Sphinx by name in any mastaba at Giza would falsify the Predynastic model and strongly support Khafre. Hundreds of Old Kingdom tombs at Giza have been excavated; none contains such a title (AERA; Reisner 1942; Junker 1929–1955). The absence is documented, not inferential.

Non-uniform western wall erosion (western half of southern wall substantially deeper than eastern half)

Requires ad-hoc: haloclasty acting on uniform limestone would produce broadly uniform damage. The western concentration requires a directional explanation haloclasty alone cannot supply.

Directly explained: pre-Khufu western runoff catchment. Reader (2001a) documents the spatial distribution of erosion as consistent with rainfall from the western plateau before Khufu's quarrying created a barrier.

Directly explained: same mechanism as Reader, but places the runoff in the terminal AHP window. Compound weathering (runoff + haloclasty + thermal cycling) accounts for both the directional pattern and the surface exfoliation.

OSL surface dating of the western enclosure wall at the deepest erosion point. Under Khafre: result ~2550 BCE. Under Predynastic: result substantially earlier, predating Khufu. Liritzis and Vafiadou (2015) have already dated adjacent Valley Temple blocks to 3000 ± 420 BCE by this method; application to the enclosure walls is technically established. Cosmogenic ^{36}Cl exposure dating of the same surface provides an independent confirmation.

Recarved head: body more eroded than continuously exposed head; 1:12 head-to-body ratio anomalous for Fourth Dynasty workmanship

Requires ad-hoc: Fourth Dynasty craftsmen who produced correctly proportioned statues elsewhere at Giza produced a 1:12 ratio here. No parallel proportional anomaly in Fourth Dynasty statuary.

Directly predicted: Reader (2026) proposes the original head represented Mafdet and was recarved by Khufu. The differential weathering (body more eroded than exposed head) is the physical signature of two separate carving events.

Directly predicted: original lion head eroded over approximately 700–900 years; dynastic recarving from the surviving interior stone produced a smaller head. The 1:12 ratio is the geometrically expected result of carving from a reduced weathered mass.

High-resolution μCT scanning of the head-neck boundary zone would detect a lithological discontinuity between the recarved head (fresh interior stone) and the original body (weathered exterior). Under a single-event Fourth Dynasty construction, no such discontinuity should exist. Under a two-event model, it should be clearly visible as a boundary between weathering states. This test is non-destructive and technically feasible with existing portable CT systems.

Table: Equifinality Matrix for the three primary discriminating anomalies. For each anomaly, the table documents what each model predicts, where it faces unresolved evidential problems, and what specific finding would decide between models. The discriminating evidence column converts the parsimony argument into testable propositions. Readers from geology, Egyptology, archaeoastronomy, and philology are invited to assess each row within their own disciplinary standards.

The 'Direct' coding for Proximity to Khafre's complex means the evidence is consistent with the model and requires no special explanation beyond the model's core commitments (the monument already existed; Fourth Dynasty builders integrated it). It does not claim the model uniquely predicts this outcome

The most credible competing explanation — that Khafre reused and incorporated an existing earlier sacred structure — is not excluded by this framework. As established in Section 6, the abandonment pattern documented by AERA is more consistent with an inherited structure than with a monument initiated and voluntarily left unfinished by its own builder; as established in

Section 7, the compound weathering signature is consistent with terminal AHP episodic rainfall and inconsistent with a purely haloclasty model. It may in fact be the mechanism: a Fourth Dynasty builder who encountered an ancient lion formation, integrated it into his complex, attempted to complete the associated temple program, and then abandoned it when the primary pyramid project demanded all available resources. This scenario would produce exactly the evidentiary signature we observe: proximity to Khafre's complex without construction attribution, geological blocks linked to the same quarry program, mid-task abandonment, and no Old Kingdom priesthood. The Predynastic origin framework and the Khafre reuse scenario are not mutually exclusive — the former describes when the core was carved, the latter describes what happened to it in the Fourth Dynasty.

The mainstream Khafre attribution rests on four genuine evidentiary pillars that deserve direct engagement rather than dismissal. First, the Sphinx Temple's inner court shares identical dimensions and layout with Khafre's Mortuary Temple court, and both temples contain emplacements for colossal statues absent from Khufu's earlier temple program — AERA explicitly notes this argues against a Khufu attribution (aeraweb.org/khafres-monuments). Second, the AERA construction sequence documents that the causeway foundation precedes the Sphinx enclosure quarrying, implying the lower enclosure was deepened after the causeway and valley temple were already built. Third, at the March and September equinox sunsets, the shadows of the Sphinx and Pyramid of Khafre merge — design unity Lehner interprets as intentional. Fourth, no contemporary inscription credits any alternative builder. These are genuine reasons reasonable scholars maintain the Khafre attribution. The Predynastic framework addresses each directly. Architectural unity between the Sphinx Temple and Khafre's Mortuary Temple documents his integration program, not original carving: any builder inheriting an ancient monument would design associated temples in coordination with the inherited structure. The AERA construction sequence is consistent with what the two-event model predicts: Khafre deepened the existing enclosure (producing the blocks Lehner–Aigner traces to the temple foundations) and built his causeway routing around the pre-existing feature at a non-cardinal angle. The sequence documents Fourth Dynasty deepening, not original carving. The equinox shadow alignment is consistent with the Sphinx's Predynastic east-facing orientation: Khafre's builders engaged with an already-oriented monument. The absence of alternative inscriptions is expected if the Sphinx predates writing at Giza.

Some anomalies discussed in this paper may have independent explanations unconnected to Predynastic origin. Sand burial cycles can result from local geomorphology and prevailing winds affecting any monument. Absence of priestly titles could reflect cult absorption into broader solar theology rather than absent institutional origin. Convergence of multiple anomalies toward one explanation increases plausibility but does not demonstrate unique causation. These limitations are acknowledged explicitly.

On the Second Dynasty Question

A critical question for any reader of this paper: if the Sphinx were proven tomorrow to date to the Second Dynasty (c. 2800 BCE) rather than the Fourth, would the Shemsu Hor hypothesis be strengthened or weakened? It would be weakened for the specific construction attribution: the construction estimate advanced here predates the early-to-mid Second Dynasty by roughly five to six centuries. A Second Dynasty Sphinx would be Early Dynastic, not Predynastic. However, it would not weaken the broader evidentiary anomaly this paper documents. A Second Dynasty Sphinx would still have no construction inscription, no priesthood through the Old Kingdom, an abandoned temple, and a multi-millennium burial cycle. The absence-of-cult evidence works against the Fourth Dynasty attribution regardless of what alternative date is proposed. Reader (2026, Archaeopress) argues independently for a pre-Fourth-Dynasty origin through geological

means and arrives at a conservative Second Dynasty or earlier estimate; his conclusion is compatible with a Predynastic origin if the cultural framework proposed here is accepted, but does not require it. This paper explicitly does not require the reader to accept the 3800–3100 BCE window. It requires only that the Fourth Dynasty attribution is weaker than convention presents — which Reader's own conservative conclusion already establishes on geological grounds alone.

On the Circularity Concern

A legitimate methodological concern with this paper is the risk of circular reasoning: the Shemsu Hor framework (developed in Papers I–III independently of the Sphinx) is used to explain the Sphinx, which then appears to validate the framework. This circularity is partly structural — any framework that makes predictions will appear to be "confirmed" by evidence that was not used to build it, which is not circularity but the expected consequence of hypothetico-deductive reasoning. The protection against genuine circularity is whether the predictions were fixed before the evidence was examined. Papers I–III were developed, peer-reviewed, and published to Zenodo before the Sphinx analysis in this paper was written. The seven predictions in Section 5 were derived from the published framework without reference to Sphinx-specific evidence. A reviewer who believes the framework is sufficiently documented in those papers to make genuine predictions is entitled to treat Section 5 as a legitimate convergence test. A reviewer who rejects the framework entirely is entitled to treat the entire Sphinx analysis as speculative. Both positions are intellectually honest. This paper does not ask the reader to accept the Shemsu Hor framework — it asks the reader to evaluate whether the Sphinx evidence is more coherently accommodated by the Fourth Dynasty attribution or by a pre-Fourth-Dynasty origin with a candidate population.

The paper does not endorse the full extent of Schoch's geological claims. It positions itself closer to Reader's conservative methodology, while proposing that Reader's own pre-Fourth-Dynasty conclusion is compatible with an earlier Predynastic origin if the cultural framework developed here is accepted. It does not claim the Shemsu Hor definitively built the Sphinx — it argues they are the most evidentially grounded candidate population given their dated presence in the proposed window, their Lower Egyptian geographic association, their attributed architectural knowledge, their lion-headed Horus iconographic tradition, and the absence of any competing Predynastic candidate with comparable documentation.

The primary vulnerability specific to this supplementary is the absence of direct Shemsu Hor material on the Giza plateau itself. A reviewer raising this objection is applying the correct scientific standard — and it deserves a precise answer rather than a simple acknowledgment. The Shemsu Hor's status as an archaeologically grounded population is the established work of Paper III (Levy 2026, DOI: 10.5281/zenodo.21381860), not of this supplementary. Paper III's own case rests on four primary lines of evidence converging on the 3800–3100 BCE window, building on two further lines already established in Papers I–II for six independent lines across the series as a whole: five Saharan pastoral markers co-occurring at HK6 at Hierakonpolis (dung fuel use, Balanites aegyptiaca offerings, livestock horn modification, the bat cow goddess emblem, and cranial variability among 45 Predynastic Hierakonpolis crania that speaks to the population rather than to diffusion, Zakrzewski and Powell 2011); the statistically significant Canopus orientation family across some 330 surveyed temples, tracking precession over time — an orientation family whose interpretation the surveyors themselves regard as open and not yet proven; the distinctive cosmogony of the Edfu Building Texts; and three independent chronological convergences. Reviewers who accept Paper III's consilience case are not required to demand Giza-specific diagnostic material before engaging this supplementary's

predictions. The question to apply is not whether the Shemsu Hor left diagnostic debris at Giza, but whether the monument's twelve documented anomalies are more coherently accommodated by a Predynastic origin framework or by the Fourth Dynasty attribution — and that question is answerable from the evidence in this paper without Giza-specific material confirmation. The absence of diagnostic Shemsu Hor material at Giza has two compounding explanations that are established facts rather than convenient claims: the Giza plateau was a corridor waypoint, not a settlement site, and Fourth Dynasty construction physically removed the Predynastic stratigraphy — "settlement debris which was removed for the construction of Menkaure's pyramid complex was excavated by Karl Kromer in 1971, and it is dated to the Predynastic and Early Dynastic periods based on the pottery and flints" (Oxford Handbook of the Art and Archaeology of the Giza Plateau, 2018, citing Kromer 1978). The stratigraphy that would contain Predynastic corridor diagnostic material was removed by the very builders whose attribution this paper challenges. An undisturbed pre-dynastic context at Giza with diagnostic material would significantly strengthen the case; its current absence is explained by documented archaeological destruction, not by the absence of the population.

A second, independent find supports the same pattern. Four ceramic jars recovered in the late 1800s near the Great Pyramid were initially assumed to be Fourth Dynasty by association with their find-site, but have since been reassessed by Mortensen as typical of the late Predynastic Maadi culture (Mortensen 1985, discussed in Reader 1997, revised 1999). Found intact, they are interpreted as evidence of a burial rather than a settlement — a second, independent data point, alongside Kromer's debris, for pre-Fourth Dynasty material displaced or decontextualised by later construction at the site.

What Would Resolve This

The following findings would falsify the Predynastic origin hypothesis. A single Old Kingdom inscription explicitly stating that Khafre or any other named Fourth Dynasty ruler built the Sphinx would resolve the attribution question definitively; no such inscription has been found, but its discovery would end this framework. OSL dating of the Sphinx enclosure walls would directly date the last exposure of the limestone surface to sunlight; if that date returned a Fourth Dynasty result, the geological argument would require revision. The 1991 Schoch-Dobecki seismic refraction study identified anomalous weathering depths beneath the western enclosure; independent replication producing a Fourth Dynasty-compatible result would constrain the erosion argument significantly. High-resolution paleoclimate proxy data specific to Giza at 3800–3100 BCE that showed no rainfall events sufficient to produce the observed erosion signature would also constrain the climate argument. Any of these positive findings would require substantial revision of this framework.

Physical Tests That Would Resolve This Framework

The Predynastic origin framework makes specific, testable claims about the age of the Sphinx enclosure walls, the internal structure of the monument, and the age of secondary deposits within its deep erosion fissures. None of the physical dating methods currently available have been applied to the Sphinx body or enclosure walls. Their application would directly discriminate between the Predynastic model and the Fourth Dynasty model. This section does not propose that the present author will conduct these tests — that is the work of licensed archaeological teams. It identifies the tests, their precedents, and what result would be expected under each model.

Surface Luminescence Dating of the Enclosure Walls

Optically Stimulated Luminescence (OSL) surface dating has already been successfully applied to monuments on the Giza plateau. Liritzis and Vafiadou (2015, 'Surface luminescence dating of some Egyptian monuments,' Journal of Cultural Heritage 16(2): 134–150, DOI: 10.1016/j.culher.2014.05.007) applied the technique to the Sphinx Temple, Valley Temple, and Menkaure pyramid, confirming most conventional Dynastic dates while noting that 'in some cases predating was obtained by some hundred of years.' More directly relevant to the Sphinx, Liritzis and Vafiadou (2015, p. 142) dated core blocks from the Valley Temple — the structure immediately adjacent to the Sphinx enclosure — to **3000 ± 420 BCE**. This places its construction in the late Predynastic or earliest Dynastic period, approximately five centuries before the reign of Khafre (c. 2558–2532 BCE). For comparison, the same study dated the Second Dynasty tomb of Khasekhemwy at Abydos to 3100 ± 660 BCE (Liritzis and Vafiadou 2015, p. 144), confirming the method's accuracy against a known historical date.

The technique is proven feasible at Giza. Critically: Liritzis and Vafiadou sampled the Sphinx Temple and Valley Temple — not the Sphinx body enclosure walls. The enclosure walls themselves, and specifically the southwest corner where Reader (2001a) documents the deepest western runoff erosion, have not been subjected to OSL dating. The proximity of the sampled structures to the Sphinx body should not be taken to imply the enclosure walls have been dated. Under the Fourth Dynasty model, OSL dating of that surface would return a date of approximately 2500–2550 BCE. Under the Predynastic model, it would return a significantly earlier date, predating Khufu's reign.

A significant precedent exists within Liritzis and Vafiadou's own Giza work: their OSL dating of the Menkaure pyramid returned an age estimate whose lower bound, at one standard deviation, predates the accepted Fourth Dynasty construction date of ~2490 BCE by several centuries — and whose central estimate substantially predates it (Liritzis, I. 2022, 'Optically Stimulated Luminescence Dating Using Quartz: Remarks and a Plea for Fairness,' Scientific Culture 8(1): 175–194). This anomalous predating on a conventionally dated Giza structure demonstrates two things: the technique is sensitive enough to detect deviations from conventional Dynastic dates on the Giza plateau; and the Giza limestone baseline already yields results that invite further investigation. If the same technique applied to the Sphinx enclosure walls returned a result consistent with the conventional attribution, it would carry genuine discriminatory weight precisely because the Menkaure result shows the method is not systematically biased toward confirming accepted dates. This is the most direct available test.

Cosmogenic Nuclide Exposure Dating

Gosse and Phillips (2001) provide the methodological foundation for in-situ cosmogenic ^{36}Cl exposure dating of limestone surfaces — directly applicable to the Mokattam Formation enclosure walls. Cosmogenic nuclide surface exposure dating is applicable to limestone surfaces through in-situ production of cosmogenic ^{36}Cl in calcium carbonate. The method is applicable to 'rock surfaces of virtually any lithology at any latitude and altitude, for exposures ranging from 10^2 to 10^7 years' (Gosse and Phillips 2001, Quaternary Science Reviews 20: 1475–1560). No prior application to the Sphinx enclosure walls exists. A sample from the deepest exposed surface of the western enclosure wall — cut during the original carving event — would yield an exposure age reflecting when that surface was first carved and exposed to cosmic ray flux. This would directly date the carving event.

Uranium-Thorium Dating of Secondary Calcite Deposits

The deep runoff fissures documented in the Sphinx enclosure walls by Reader (2001a) and Schoch (1992) would, over millennia, have accumulated secondary calcite deposits as percolating groundwater precipitated calcium carbonate into the fissure walls. Uranium-Thorium (U/Th) series dating of these deposits is a well-established method for secondary carbonate formations (uranium is easily transported by carbonate-rich waters; thorium is retained in the calcite on deposition, providing a dating clock). Dating these deposits would establish a minimum age for the fissure formation — which in turn places a minimum age on the weathering event that produced them. A caution applies: uranium leaching in thin exposed calcite deposits can introduce error in both directions, and U/Th results should be confirmed by an independent method (Plagnes et al. 2003; Aubert et al. 2012). Used in combination with OSL, the two methods would provide mutually confirming age constraints.

High-Resolution Microtomography of the Head-Body Boundary

Propagation Phase Contrast Synchrotron Microtomography (PPC-SRμCT) is the established gold standard for non-invasive, non-destructive imaging of the internal structure of archaeological remains, demonstrated on Egyptian mummy material (Tanti et al. 2021); its application to carved stone is proposed here, not yet demonstrated. Applied to the Sphinx face and neck region, high-resolution μCT scanning would detect the internal boundary between the recarved head zone (the current nemes-bearing dynastic face, carved from harder stone) and the original lion-form substrate beneath. If a two-event model is correct, this boundary should be visible as a discontinuity in lithological weathering state and tool-mark pattern. This test is currently feasible with portable or large-bore clinical CT systems and entirely non-destructive. None of these tests have been applied to the Sphinx body or enclosure. Their application would directly test the Predynastic origin framework against the Fourth Dynasty model.

If future excavations at Giza were to recover HK6-style elite markers — cattle burials, specific ceramic types, or Saharan pastoral figurines — this would constitute direct Shemsu Hor material at the plateau and significantly strengthen the attribution. The strongest conventional evidence for a Fourth Dynasty origin also requires direct engagement. Lehner and Aigner's geological fingerprinting of the Sphinx Temple core blocks (ARCE Sphinx Mapping Project, documented in AERA and Lehner 1992, Cambridge Archaeological Journal) demonstrated that the limestone blocks used in the Sphinx Temple walls are geologically matched to the lower layers of the Sphinx enclosure quarry, establishing that the Sphinx body and its temple were part of the same quarry-construction sequence. This is the most specific physical evidence for a unified Fourth Dynasty program. The Predynastic origin framework is compatible with this finding under the following scenario: if a Predynastic Sphinx body existed in the Giza limestone, Fourth Dynasty builders who encountered it would have quarried the surrounding enclosure area to deepen and complete it, producing the matched block sequence observed — regardless of when the original carving was made. Reader (2026, Archaeopress) documents a similar argument: even a pre-Fourth-Dynasty Sphinx body could have been surrounded by Fourth Dynasty quarrying and temple construction that produced the block match. The matched blocks prove the temple was built from the enclosure quarry; they do not prove when the Sphinx body itself was first carved. Moreover, under the Predynastic model, the Sphinx body was carved from the uppermost exposed Member II beds. The subsequent Fourth Dynasty deepening of the enclosure to its current level would have necessarily cut through lower Member II beds — precisely the material matched to the Sphinx Temple core blocks. If the temple blocks derive from beds stratigraphically below the body, the body must be older than the deepening event that exposed those lower beds. The Lehner-Aigner match is therefore not only compatible with a pre-existing

body but, on this stratigraphic reading, geologically requires it. AERA's own documentation adds a further point: "Khafre's builders cut a drainage channel along the north side of the eastern end of the pyramid causeway. The channel opens into the upper southwest corner of the Sphinx quarry. They would not have cut a channel that drained water into the Sphinx enclosure ditch so the channel must have had a function that predated and was made obsolete by the quarrying of the Sphinx enclosure" (AERA). AERA uses this to argue the causeway precedes the deep Sphinx enclosure quarrying. The Predynastic model accommodates the same sequence without contradiction: a Predynastic Sphinx existed in a shallow surrounding area; Khufu built his causeway with a drainage channel pointing north toward the Sphinx area; Khafre then deepened the enclosure, making the drainage channel obsolete and producing the matching temple blocks. The sequence of construction events is identical under both models. AERA's evidence proves when the deep quarrying happened relative to the causeway; it does not prove when the Sphinx body was carved. Critically, AERA's own stratigraphic data support rather than undermine this reading: the Aigner-Lehner study found that Sphinx Temple core blocks were cut from the lowest layers of Member II of the Sphinx quarry — beds only exposed by the Fourth Dynasty deepening of the enclosure. If a Predynastic body already existed carved from the uppermost Member II beds, the Fourth Dynasty quarrying programme that deepened the enclosure would have cut exactly through those lower Member II beds, generating precisely the matched core blocks found in the temple walls. The stratigraphic sequence is therefore not a problem for the two-event model: it is what the model predicts. The blocks are Fourth Dynasty period; the body need not be. AERA itself acknowledges the Sphinx and its temple were "the final elements added to Khafre's building program" and that "it is doubtful whether a cult service specific to the Sphinx was ever organized" — anomalous for any pharaoh's primary monument under any chronological model.

A related conventional argument deserves direct engagement: the claim that the Sphinx Temple, Valley Temple of Khafre, and Khafre's causeway form a single master-planned architectural unit, implying simultaneous Fourth Dynasty construction. Two observations complicate this interpretation. First, Khafre's causeway does not run to the cardinal directions: Nell and Ruggles (2014, Journal for the History of Astronomy, arXiv:1302.5622) measured its azimuth by precision Total Station survey at 103° 26′/283° 26′ — a deviation of +13° 26′ from true east–west, vastly greater than the ±3–4 arc-minute deviations of the pyramids themselves. The southern wall of the Sphinx enclosure follows this same non-cardinal orientation (Reader 2001a). If the complex were a single original master plan built on a cleared site, there would be no architectural reason to deviate 13° from cardinality for the causeway — the pyramids themselves are cardinal to within arc-minutes. A non-cardinal causeway is architecturally consistent with builders routing around a pre-existing feature whose orientation they could not control. The non-cardinal causeway angle is more consistent with builders routing their causeway around a pre-existing enclosure whose orientation they could not control, than with builders freely laying out a new complex from scratch. That reading is not confined to the geological literature. Stadelmann reaches it independently and states it flatly: the southern limit of Khufu's quarries is defined by the rocky escarpment on which Khafre later set his causeway, and it is precisely because of those quarries that Khafre's causeway does not run east–west to his valley temple but deviates visibly to the south. To lay out its course, on his account, Khafre had to take account of an already existing arrangement — an important older structure that had to be routed around — which required a change in the normal line of the causeway and not the reverse, as he notes is always claimed; and the object in question, he concludes, can only have been the Great Sphinx (1999, p. 870). The point of citing him here is the direction of the constraint rather than the date. Stadelmann's older structure is a monument of Khufu's reign, not a Predynastic one, and his study assigns the Sphinx to Khufu throughout. What his account establishes independently is that the causeway was routed around the Sphinx rather than the

Sphinx fitted to the causeway — the relation this model requires, asserted by a mainstream Egyptologist arguing for a Fourth Dynasty date on grounds of his own. Second, and more decisively, Lehner himself acknowledges in his primary survey thesis (Zenodo DOI 10.5281/zenodo.1203621): “The Sphinx and its associated temple were not completed, and it is doubtful whether a cult service specific to the Sphinx was ever organized.” A pharaoh’s primary monument — the centerpiece of a complex that included the second-largest pyramid ever built — was left incomplete with no cult service. This is anomalous for original construction and consistent with the appropriation of an inherited structure that the Fourth Dynasty builders integrated but never fully subordinated to their institutional program.

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article and therefore probably within Part I, on rulers named in Thirteenth Dynasty execration material, rather than within the Byblos section. Bibliographic details also confirmed in Grimal, N. (2013), 'Diplomatie et écriture: à propos des inscriptions égyptiennes d'Ougarit', in Bordreuil, P. et al. (eds.), Les écritures mises au jour sur le site antique d'Ougarit (Syrie) et leur déchiffrement, Paris: Académie des Inscriptions et Belles-Lettres, 187–202, at p. 197 n. 43 and bibliography. Cited here at p. 84 as the attestation for Neferseshemre by both Der Manuelian 2003, p. 32 n. 9, and de Wit 1951, p. 195 n. 35; that page not consulted directly.]

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